

Cost of the Federal Guaranteed Annual Income Proposal



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Ministry of Treasury, Economics and
Intergovernmental Affairs
Taxation and Fiscal Policy Branch



Ontario Tax Studies 10

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HISTORICAL NOTE

Confused, contradictory and inequitable social security systems are not a new phenomenon. Neither is the desire to reform them. As early as 1834, the British Parliament commissioned a review of the social and economic consequences of the English Poor Law System which operated in 15,535 parishes in England, Scotland and Wales. Poor Law benefits were available to the able-bodied poor and the impotent (infants, aged persons, invalids, lunatics, and others unable to support themselves). Benefits increased with family size and were indexed to the cost of basic food stuffs. In the context of Federal-Provincial Social Security Review, the following quotes taken from The Report of the Royal Commission on the Poor Laws, 1834 instill a feeling of "deja vu".

Of the Poor Laws in general:

"A common consequence is that to satisfy the clamours of the undeserving, the general scale of relief is raised; but the ultimate result of such a proceeding appears always to be to augment the distress which it was intended to mitigate and to render more fierce the discontent which it was intended to appease."

Of the disincentives for low-income workers not receiving benefits:

"We have seen that in many places the income derived from the parish for easy or nominal work, or, as it is most significantly termed, 'in lieu of labour', actually exceeds that of the independent labourer; and even in those cases in which the relief-money only equals, or nearly approaches, the average rate of wages, it is often better worth having, as the pauper requires less expensive diet and clothing than the hard-working man."

and;

"It appears accordingly, that when a parish has become pauperized, the labourers are not only prodigal of their earnings, not only avoid accumulation, but even dispose of, and waste in debauchery, as soon as their families entitle them to allowance, any small properties which may have developed on them, or which they may have saved in happier times."

Of those receiving benefits:

"The severest sufferers are those that have become callous to their own degradation, who value parish support as their privilege, and demand it as their right, and complain only that it is limited in amount, or that some sort of labour or confinement is exacted in return. No man's principles can be corrupted without injury to society in general; but the person most injured is the person whose principles have been corrupted."

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PREFACE

This study outlines the methodology used by Ontario in computing the net cost of implementing the proposed federal guaranteed annual income. It should be viewed as a superior alternative to the methodology employed in the Quantitative Report on Income Support and Supplementation. The cost estimation procedure involves using the PROGRES micro-simulation model in conjunction with a second model embodying the basic elements of a dynamic economy. Both models were developed by the Ontario Government and will be made available to all governments participating in the Federal-Provincial Social Security Review through the Social Security Research Library (SSRL). They are an essential part of Ontario's contribution to the Social Security Review.

This document should be viewed in the financial context. It does not analyze the social and economic implications of the proposed support and supplementation system. Its sole purpose is to provide a reliable cost estimation procedure for implementing the proposed program in Canada. It is hoped that the material presented will aid in the appreciation of the many difficulties involved in reforming an established social security system. Other governments may find this information useful in their own assessment of the financial impact of support and supplementation.

This study has been prepared under the guidance of T. S. Lett, Senior Budget Advisor for Social Security in the Taxation and Fiscal Policy Branch, directed by B. Jones. The majority of the work was jointly undertaken by J.H. Ilkiw and V. K. Comar.

A. R. Dick, Q.C.
Deputy Minister

April, 1976

D. M. Allan
Executive Director
Fiscal Policy Division

SUMMARY OF RESULTS

1. Ontario estimates that the net cost of implementing the income support and supplementation system proposed by the federal government would be \$3.0 billion in 1975. This compares with the federal cost estimate of \$1.1 billion.
2. Most of the huge cost difference arises because the federal estimation procedure fails to recognize that support and supplementation are "add-on" programs, requiring "add-on" financing. As currently proposed, the new social security initiatives do not involve any rationalization or savings from the already existing proliferation of income support programs in Canada.
3. As well, the federal estimates do not take into account the influence of economic cycles, especially the decline in economic activity between 1973 and 1975 and the related rise in income support costs.
4. The Ontario estimate of \$3.0 billion should be considered conservative since it does not include:
 - . administrative costs, which could be substantial, or
 - . the long-run costs which could result from the increased disincentive to work.
5. The cost of the federal guaranteed income proposal will grow rapidly over time. Starting from a base cost of \$3.0 billion in 1975, public expenditures on this federal scheme could escalate by 46 per cent in only three years to a total of \$4.4 billion by 1978.
6. Program costs of this magnitude will be impossible to finance within existing levels of taxation which was the original objective of the federal government.



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INTRODUCTION

This paper summarizes the research undertaken by the Ministry of Treasury, Economics and Intergovernmental Affairs to evaluate the costs of introducing the income support and supplementation program proposed by the Federal-Provincial Social Security Review. The analysis has two purposes. The first is to show the true cost of implementing the proposed support and supplementation program is almost triple the federal estimate. A large share of this sizable differential is due to the assumption in the federal estimation procedure that support and supplementation will be integrated with existing income support programs when it essentially is an "add-on" program. The second is to introduce a number of significant improvements over the current federal cost estimating procedures.

The introductory chapter explains the concepts of "support" and "supplementation" within the negative income tax framework. The second chapter dissects the total cost of the proposed programs into a number of categories to illustrate both the nature of the estimated cost elements currently being analyzed by the federal government and the kinds of costs that are effectively being ignored. As well, the federal estimation procedures used to obtain the \$1.1 billion estimate of the net cost of implementing support and supplementation are examined in detail. It is shown that the procedure used to estimate net costs not only ignores the influence of cyclical economic activity, but it also employs an inappropriate definition of net costs.

Chapter III presents a superior approach to estimating the net cost of implementing the proposed income support and supplementation program. It discusses an econometric equation formulated to introduce realistic aggregate economic behaviour into the process of cost estimation. The chapter also

examines particular systematic biases in the Survey of Consumer Finances (1973) data base and suggests corrective measures. The improved data base, together with the estimated dynamic model, and the appropriate definition of net costs, can be expected to yield more realistic but significantly higher costs of implementing the proposed support and supplementation program.

The final chapter presents Ontario's estimate of the net cost of implementing support and supplementation in Ontario and Canada for the years 1973 through 1978 and compares them to the federal estimate.

CHAPTER I

CANADA'S APPROACH TO NEGATIVE INCOME TAX

For a clear understanding of the proposed income support and supplementation program under consideration by the Federal-Provincial Social Security Review, it will be discussed within the context of a negative income tax system. At the outset, it should be noted that many design problems associated with the proposed income maintenance system have not yet been resolved. Nevertheless, the following discussion contains the essential features of support and supplementation¹. For those readers who are not familiar with the principles and problems of negative income tax, Appendix A has been provided.

A. THE PRINCIPLES AND PROBLEMS OF SUPPORT AND SUPPLEMENTATION

1. The Main Structural Characteristics of Support and Supplementation

The two social and economic objectives which determined the basic design features of support and supplementation were described by the Honourable Marc Lalonde, Minister of Health and Welfare in the Working Paper on Social Security in Canada². With regard to the concept of supplementation,

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1. The documents currently in circulation describing the various facets of support and supplementation systems number nearly 300. For access to all documents contact the Working Party on Income Maintenance, Federal-Provincial Social Security Review, Department of National Health and Welfare, Ottawa.
 2. Hon. Marc Lalonde, Working Paper on Social Security (Government of Canada, Ottawa, 1973).

the established objective was to design a uniform income supplementation program, with built-in work incentives, for "those who are working but whose incomes are inadequate by reason of family size...or by reason of the nature of their employment (low-paying self-employment or intermittent or partial employment)"³. This type of program, it is argued, would not only provide the "working poor" with income comparable to that available to social assistance recipients, but it would also provide an incentive for those who are employed to remain employed by reducing supplement payments by only a proportion of additional earned income⁴. Essentially what is being described is a simple negative income tax system characterized by a modest income guarantee and a tax-back rate significantly less than 100 per cent.

The concept of support requires the design of a uniform income support program that provides a socially acceptable guaranteed income for those people whose incomes are insufficient because they are unable or not expected to work. This includes the elderly, disabled, single parent families, and people who are not readily employed because of a combination of factors such as age, lack of skills, or length of time out of the labour market. In addition, the income support payments should provide some advantages to those recipients of the support payments who have income from savings or who choose and are able to earn income from work⁵. Within the negative income tax framework, the support system described is a negative income tax system with a generous guarantee and a tax-back rate slightly less than 100 per cent.

Considering the policy implications of the two stated objectives, the program that is being prescribed to reform Canada's social security

3. Ibid., p. 30

4. Ibid., p. 30

5. Ibid., p. 32

system is the implementation of a negative income tax scheme that distinguishes between those who are working or are able to work and those who cannot work or cannot be expected to work. Indeed, the most viable proposal under consideration by the Social Security Review is an integrated two-tier negative income tax system which attempts to distinguish between those who are eligible for supplementation and those who are eligible for support. Supplementation payments are calculated using a modest income guarantee and a low tax-back rate while the additional support payments are based on a more generous income guarantee and a higher tax-back rate.

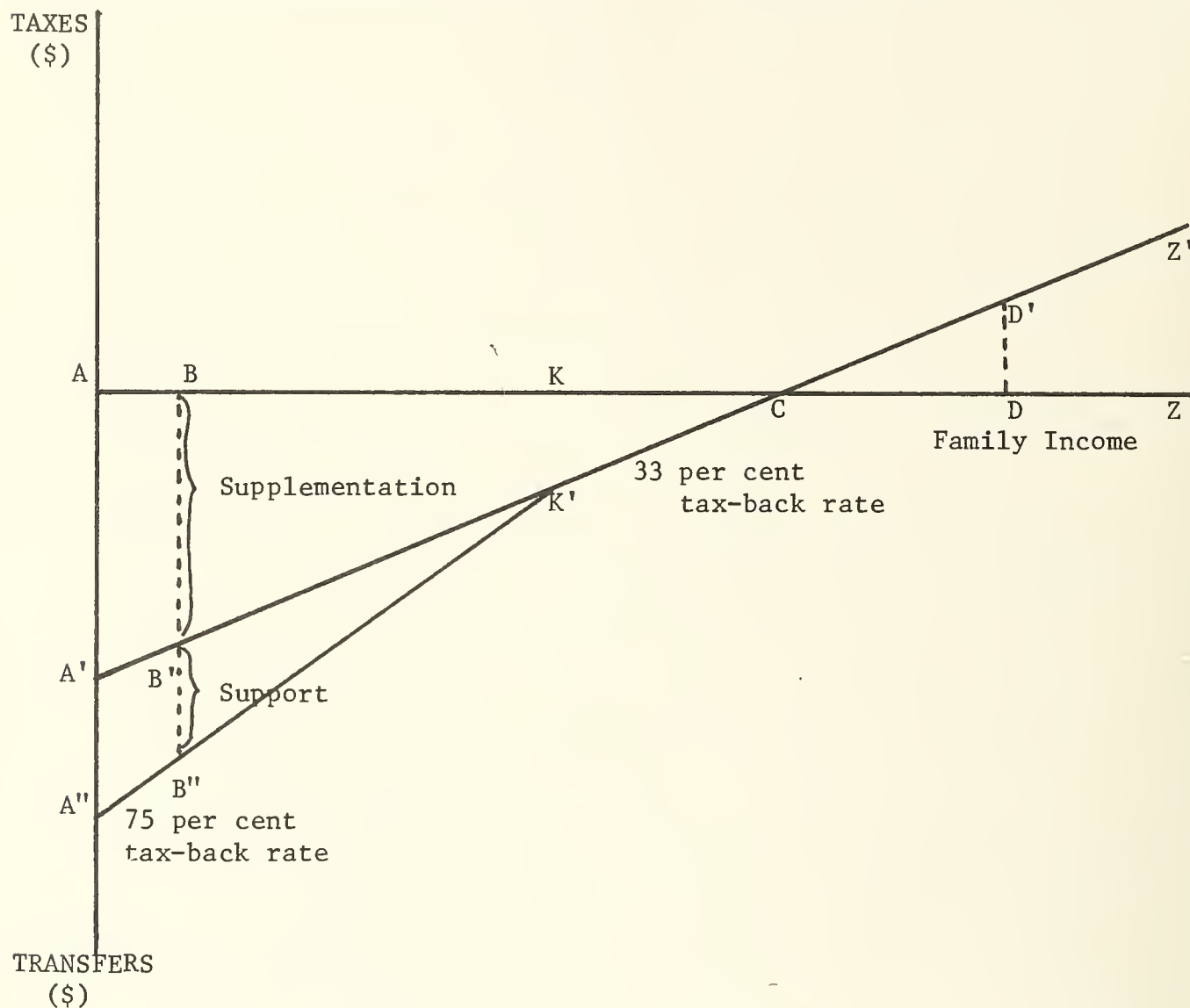
2. Analytical Explanation of Support and Supplementation

Analytically, the integrated support and supplementation system is easily portrayed by the "stacking" of two negative income tax systems, each with a different guarantee and tax-back rate. Employing the standard analytical diagram used to explain a simple negative income tax system, the basic structural features of the two-tiered negative income tax system proposed for consideration by the Social Security Review are depicted in Figure 1.1.

The conceptual operation of the support and supplementation program is straight forward. If annual family income is AD, the income tax liability for the family is DD'. If annual income is AB and the family is eligible for supplementation, then the negative income tax transfer is BB'. If the family receiving the income supplement is also eligible for support because it is a single parent family or is headed by a disabled individual, then an additional transfer of B'B'' is paid to the family. With zero annual income, families classified as eligible for supplementation only, receive the income guarantee of AA', while families eligible for both support and supplementation are

DIAGRAMATIC REPRESENTATION OF THE PROPOSED
SUPPORT AND SUPPLEMENTATION SYSTEM

FIGURE 1.1



guaranteed an annual income equal to AA". It should be noted that the portion of the population eligible for supplementation faces a smaller tax-back rate than the portion of the population classified as support only up the kinked intersection point K'. Families with annual incomes that place them to the right of the intersection point receive the same transfer and face the same tax-back rate regardless of their eligibility classification.

3. Suggested Levels of Support and Supplementation

To appreciate the relative magnitudes of the guarantees being discussed by the Review, it is useful to relate them to the current levels of social assistance in Ontario. Table 1.2 compares short-term social assistance (GWA) and long-term social assistance (FBA) maximum payments with selected support and supplementation guarantees. The fifth column of the table records the associated breakeven level of income, where the supplementation tax-back rate is assumed to be 33 per cent. Table 1.2 reveals two interesting points. First, total support guarantees are not significantly different from comparable maximum FBA and GWA benefits. Second, supplementation guarantees are, on average, just slightly greater than one-half the support guarantees. Since the support and supplementation guarantees are comparable with current legislated minimum acceptable income levels, in terms of these standards they are not overly generous.

COMPARISON OF PROPOSED SUPPORT AND SUPPLEMENTATION ¹ GUARANTEES WITH SELECTED MAXIMUM ANNUAL LEVELS OF GWA AND FBA ¹					TABLE 1.2
FAMILY CHARACTERISTICS	GWA	FBA ²	SUPPL GUARANTEE	SUPPORT ³ GUARANTEE	BREAKEVEN ⁴ LEVEL
Single Adult	2124	2280	1200	2320	3600
Childless Couple	3672	4056	1940	3750	5820
2 Parents with 2 Children	5246	5702	3090	5300	9270
2 Parents with 3 Children	6026	6519	3665	6075	10995
1 Parent with 1 Child	3696	4045	1940	3750	5820
1 Parent with 2 Children	4586	4946	2515	4525	7545
1 Parent with 3 Children	5402	5810	3090	5300	9270
1. FBA and GWA figure effective May, 1975					
2. Includes Family Allowances					
3. The support guarantee always includes the supplementation guarantee.					
4. Assumes a 33 per cent tax-back rate for the supplementation tier. See Appendix A for details of method of calculation.					

Table 1,3 illustrates the income-tested total annual transfers available to families of different sizes with only one income earner employed at the minimum wage. It is further assumed that the support tax-back rate is 75 per cent, the supplementation tax-back rate is 33 per cent, and that the guarantees are equivalent to those presented in Table 1.2. The figures in Table 1.3 reveal, as must be expected, that larger families receive larger transfers and families with incomes that place them to the left of the kinked intersection point of the support and supplementation programs, may be eligible for an additional support payment.

ILLUSTRATION SUPPORT OR SUPPLEMENTATION TRANSFER RECEIVED BY FAMILIES WITH ONE INCOME EARNER EMPLOYED AT THE MINIMUM WAGE				TABLE 1.3
FAMILY CHARACTERISTICS	ANNUAL INCOME AT MINIMUM WAGE	SUPPLEMENT TRANSFER	POSSIBLE ADDITIONAL SUPPORT TRANSFER	POSSIBLE TOTAL GROSS INCOME
Single Adult	4992	-	-	4992
Childless Couple	4992	293	0	5285
2 Parents with 2 Children	4992	1443	113	6548
2 Parents with 3 Children	4992	2018	313	7323
1 Parent with 1 Child	4992	293	0	5285
1 Parent with 2 Children	4992	868	0	5860
1 Parent with 3 Children	4992	1443	113	6548

For example, a two parent, three child family would receive total supplementation transfers equal to \$2018. This would bring gross family income to \$7010. If, for any reason, the family was also eligible for support payments, the additional transfer \$313 would increase the gross family increase to \$7323.

At the level of the individual family unit, both the income guarantees and the negative income tax transfers may not appear excessive. But, as it is noted in Appendix A, adequate benefits at the micro-economic level

may possibly be excessive in the aggregate. The final decision about the adequacy of a particular benefit structure cannot be made until estimates of the aggregate costs are available.

4. Summary of Principles and Problems of Support and Supplementation

Accepting a simple negative income tax system as a point of comparison, the only significant conceptual innovation of the proposed support and supplementation program is its two-tier structure. By integrating a negative income tax system for those who work or are able to work with a system that is designed for those who are unable or are not expected to work, there has been an effective doubling of the major structural parameters available to the policy-makers. This added flexibility allows the design of a uniform and consistent transfer system which simultaneously accommodates the distinct and differing needs of two segments of the recipient population.

But in the aggregate, the problems of the sensitivity of costs inherent in a negative income tax remain. The more generous are the income guarantees and the lower are the tax-back rates, then the larger is the eligible population and the higher are the costs of implementation. At best, the added flexibility can only be expected to slightly mitigate the sensitivity of aggregate costs to increases in the generosity of policy parameters at the level of the family unit. Clearly, without even considering the additional problems to be discussed in the following chapter, the selection of the appropriate benefit levels and tax-back rates is not easily resolved.

CHAPTER II

LIMITATIONS AND PROBLEMS OF THE CURRENT COST ESTIMATES OF SUPPORT AND SUPPLEMENTATION

A great deal of time and effort has been expended to estimate the expected net cost of implementing the proposed income support and supplementation program¹. However, it will be shown that the current, published estimation procedures exclude significant sources of potential costs to such an extent that it would be irresponsible to implement so comprehensive a program on the strength of the available cost estimates.

A. CATEGORIZATION OF COSTS

In preparation for the discussion of the limitations and problems of the current estimates of the cost of support and supplementation, it is instructive to introduce a list of the costs that are associated with the implementation of a negative income tax system. The first four categories define the impact, dynamic, labour supply response and administration costs while the last category notes the existence of long-run economic costs.

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1. Quantitative Report on Income Support/Supplementation, Working Party on Income Maintenance, Documents No. 264, 264A, 264B, 264C. Federal-Provincial Social Security Review.
 2. Normal Income excludes benefits paid through government transfer and insurance programs.

Impact Cost

Impact cost refers to the annual cost that would be realized if a proposed income support and supplementation benefit structure is implemented with the assumptions that transfers are based only on income; that there is 100 per cent participation of the eligible families; that there are no overpayment or underpayment of transfers; that there is no behavioural response to the introduction of the program; and that economic conditions are given. If it is further assumed that other transfer programs are non-existent and if support and supplementation payments are based on the normal income definition², then the impact cost is more accurately termed "gross impact cost". To arrive at "net impact cost", payments made to the support and supplementation recipients under existing transfer programs (such as Unemployment Insurance, Workmen's Compensation, Social Assistance, Canada and Quebec Pension Plans, etc.) are subtracted from gross impact cost. The net cost figure, with all its associated restrictive assumptions, is one measure of the incremental cost of a program reform.

At this point, it is important to emphasize that impact cost estimates are based upon quantitative techniques employing cross-section survey data. As a consequence, the magnitude of any impact cost estimate should not only be attributed to the program reform being tested, but should also be identified as the product of the particular economic conditions prevailing at the time the survey was undertaken.

Dynamic Cost

Impact cost estimates, because they are based on cross-section data, necessarily reflect the economic conditions that characterized the year represented by the survey. But if economic conditions in the year in which

the negative income tax proposals are to be implemented, differ from the economic conditions represented in the cross-section data, then, in order to be credible, the differences must be reflected in the estimates of the impact cost. Any methodology which does not acknowledge that impact costs will fluctuate within a dynamic economy disregards an essential aspect of the estimation process. For want of a better term, the component of the impact cost attributable to the cyclical pattern of economic activity will be referred to as the dynamic cost.

Labour Supply Response Cost

This third category delineates the additional program costs associated with the reduction of the labour supply that must be expected with the establishment of a permanent two-tier negative income tax system. Though standard economic analysis supports the popular argument that a guaranteed income program would lead to a reduction in the aggregate amount of labour supplied, the theoretical analysis sheds no light on the magnitudes of either the negative labour response or the associated increase in program cost³. Thus, considering the possibility that the costs of a negative labour supply response may not be trivial, and also considering the political and social implications of introducing a program that may contravene society's view of the "work ethic", it is necessary that an analysis of the proposed support and supplementation systems specifically include estimates of the labour supply response and the implied cost of the behavioural response.

3. Pechman, J. A. and Timpane, P. M., (eds.), Work Incentives and Income Guarantees, Brookings Institute, Washington D.C. 1975. pp. 60 - 87

Cost of Administration

The administration cost category can be divided into two sub-classifications. The first deals with the overall administrative costs of a negative income tax system and the second sub-classification recognizes the costs related to the selected accounting mechanism.

In most discussions of a negative income tax system, two particular assumptions are either explicitly stated or are implicitly accepted.

First, it is assumed that family income is the sole criteria upon which eligibility to negative income transfers are based; and second, it is assumed that existing income transfer programs will be replaced by a uniform and consistent negative income tax program. In this way, it is argued, administrative economies will be realized because of the absence of unnecessary and redundant bureaucracy⁴. But, it remains to be recognized that to the extent access to the proposed two-tiered income maintenance program is based upon criteria other than family income, and to the extent existing income transfer programs are not replaced, the assumed administrative cost savings are illusory.

The accounting system is one of the more technically complex and intricate features of a negative income tax scheme. How transfers are paid, how frequently income is reported, how detailed income information is documented, how frequently transfers are paid, the equitable time period over which the adequacy of a family's income is to be evaluated, and whether overpayments or underpayments of income transfers should be reconciled are all specified by the selected accounting method. The unscrutinized acceptance

4. Friedman, M., Capitalism and Freedom, University of Chicago Press, Chicago, 1967 p. 192-3.

of a particular accounting system could easily result in either a too responsive NIT system with large overpayments of transfers, or a transfer system with few overpayments but unresponsive to the needs of families it was designed to help. Accordingly, a highly responsive accounting system would incur large administrative costs, not only because of the presence of a bureaucracy to calculate and collect overpayments but also because of the presence of an administrative bureaucracy needed to monitor and verify the income flows of families eligible for negative income tax transfers. As the system becomes less responsive, the administrative costs would become less.

Although advocates of negative income tax programs often dismiss the practical difficulties of administration as problems of minor detail⁵, it must still be recognized that estimates of administrative costs are crucial to an evaluation of the workability of any proposed income support and supplementation system⁶.

Long-Run Economic Costs

This last category is included to insure the recognition that there are long-run economic consequences of implementing a guaranteed income system. An understanding of the long-run implications requires the analysis of a number of economic problems that are corollaries to a negative income tax proposal. For example, how does a guaranteed income system effect aggregate personal savings, and by implication, the accumulation of capital in the private sector? If a universal negative income tax system results in a significant negative labour response, what are the implications for the

5. Friedman, M., Ibid., p. 192

6. Pechman, J. A. and Timpane, P. M., (eds), op. cit., p.3.

aggregate output of goods and services, economic growth, and the target level of acceptable unemployment? Is labour mobility discouraged? Should not minimum wage legislation be repealed? What are the implications for price stabilization policies? Though long-run economic consequences of policy proposals may often appear academic and remote, it must nevertheless be realized that policies implemented in the present may result in problems in the future.

B. LIMITATIONS AND PROBLEMS OF THE CURRENT COST ESTIMATES OF SUPPORT AND SUPPLEMENTATION

To date the most comprehensive analysis of the cost of implementing the proposed two-tier negative income tax system has been undertaken by the Working Party on Income Maintenance for the Federal-Provincial Social Security Review. The analysis is documented in the Quantitative Report on Income Support/Supplementation. The content of the report includes a single net cost estimate for a representative benefit structure; an appendix containing gross cost estimates for 36 additional benefit structures; an explanation of the cost estimation procedures; a description of the data employed; and an investigation of the socio-economic characteristics of the target population.

From all the analysis undertaken by Working Party on Income Maintenance, the most significant conclusion drawn is that the net cost of implementing the proposed income support and supplementation program across Canada in 1975 would have been \$1,135 million. But upon close examination of the methods employed to produce the net cost estimate, it becomes apparent that not only is the \$1,135 million figure limited with respect to its

estimate of all the costs associated with the proposed program, but it is also the product of an questionable estimation procedure.

1. Limited Content of Current Cost Estimates

Before the problems of the estimation procedure employed in the Report are discussed in detail, it is convenient to clearly establish which cost categories are openly excluded from the available estimates. With reference to the cost of administration, the current estimates are "as neutral as possible with regard to delivery mechanisms and jurisdiction¹⁷". In other words, administrative costs are excluded from the current estimates. Also, the estimates are based on the use of a static model that assumes no behavioural changes⁸; this means that the consequences of a probable negative labour supply response are not accounted for in the cost estimation procedure. The long-run implications for economic behaviour are noted as being important, but no effort has been made to estimate the economic costs involved⁹. Thus, out of the five general cost categories, three have been excluded at the outset of the estimation procedure, even though their importance is acknowledged.

This leaves the two categories of impact and dynamic costs. But a close inspection of the methodology used to arrive at the net impact cost of implementing support and supplementation in 1975, reveals that the estimated costs reflect neither the economic conditions present in 1975 nor the true intent of the proposed program. Thus, the validity of the current cost estimate must be considered unreliable.

7. Quantitative Report on Income Support/Supplementaion, op. cit., p. 3

8. Ibid., p. 133

9. Ibid., p. 133

2. Problem: Influence of Cyclical Economic Activity Excluded

If the Report restricted itself to a cross-section estimation of the impact cost of implementing support and supplementation for the year represented by the data base, the Survey of Consumer Finances (1973), few criticisms could be made. All that is involved is a cross-section computer simulation. For each sampled family in the survey, an appropriate negative income tax transfer is calculated according to family size and eligible family income; and, after multiplying the individual family transfers by the sample weight, the sum of all transfers estimate the impact cost. By varying the policy parameters of the proposed two-tier negative income tax system and repeating the simulations, a variety of impact costs, each subject to the economic conditions prevailing in the year represented by the survey, can be obtained. An analysis of the estimated impact costs reveals how sensitive aggregate costs would have been to changes in policy parameters had support and supplementation been implemented in the year 1973.

But the estimates presented in the Report are for 1975, not 1973, the year represented by the Survey of Consumer Finances. Consequently, the cost estimates should be viewed as a combination of impact cost and dynamic cost. If the methodology of simulating impact costs using cross-section data is acceptable, then the validity of the current cost estimates depends on the acceptability of the method of incorporating the dynamic cost component. Here lies the first serious problem: the influence of cyclical changes in economic activity have been excluded from the estimation procedure employed.

As a curious consequence of excluding the influence of changing levels of economic activity, the estimation procedure in the Report predicts that the net cost of implementing the proposed program declines when general economic conditions deteriorate. This is contradictory to both past experience and common sense. To understand how this perverse relationship

occurs, the cost estimation procedure of the Report must be reviewed in more detail.

Current Cost Estimation Procedures

To incorporate the dynamic cost component, current methods¹⁰ of estimation have relied upon procedures which modify the original micro-economic data base by "growing" both family income and the number of families by exogenously determined growth factors in an attempt to represent the income distribution of the year 1975. The projected distribution is then used to estimate impact cost. This approach to estimating the 1975 impact cost of support and supplementation is not without serious problems. For it soon becomes apparent, as is noted by the Report, that "the problems of transferring an income distribution on the basis of very little exogenous information is so considerable that the cost estimates are as much an image of the income growth assumptions as they are of the original distribution"¹¹. Though this concern about the nature of the projected income distribution refers specifically to the problem of incorporating higher levels of income, equally serious problems exist with modifying the income distribution with respect to changes in the numerous other interdependent variables which determine the distribution of income. A particularly serious problem with trying to forecast intertemporal

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10. PROGRES: The Province of Ontario General Redistribution Simulator (VERSION III) Taxation and Fiscal Policy Branch, Ministry of Treasury, Economics and Intergovernmental Affairs, Toronto, 1975; and "BENTAX: A Model to Estimate the Impact Costs of Support/Supplementation", Income Maintenance Directorate, Policy Research and Long Range Planning, Department of Health and Welfare, Ottawa 1975.
 11. Quantitative Report on Income Support/Supplementation, Op. cit., pp 16-19

changes in income distributions is the inability of present methodology to satisfactorily accommodate the effects of cyclical changes in economic activity. To support this contention, it is only necessary to show that though the relationship among income growth, economic activity, unemployment and program cost is acknowledged by the Report, no attempt has been made to incorporate the relationship into the income distribution forecasting procedures used to estimate costs.

The Neglected Influence of Cyclical Economic Activity

The analysis undertaken by the Report confirms the expectation that there is an inverse relationship between income growth rates and the level of economic activity as represented by the unemployment rate. It was found, not too surprisingly, that in periods of intense economic activity not only do employment rates rise and individuals at the marginal level experience increases in income, but that the changes in family income are higher at low levels of income than at high income levels. The reverse is true when the economy is slack. The analysis ends by concluding that income growth rates are related to economic activity and that the unemployment rate could be used as an indicator for determining income growth rates at various levels of income¹².

Since low income families comprise the target population for support and supplementation, the inter-relationship between income growth and unemployment is significant. For as economic activity declines, the cost of support and supplementation will increase because of the increased number of families eligible for transfers and in an economic upswing, program cost will decrease because of the decrease in eligible families. Considering the unambiguous

12. Ibid, Appendix A, pp. 33

relationship between economic activity and the cost of the two-tiered negative income tax system, it is reasonable to expect that the relationship would be incorporated into the methodology used to transform the Survey of Consumer Finances data into a representation of the 1975 income distribution. But despite the admitted importance of the interdependence of unemployment levels and income growth rates, it was decided to grow total family normal income at a single growth rate in each year of the projection period for all levels of income, for all categories of normal income and for all family sizes¹³. The consequence of not applying discriminating growth rates in a period of declining activity as has been experienced between 1973 and 1975 is acknowledged by the Report to overstate the income of support and supplementation recipients and, by implication, underestimate the gross impact cost of implementing the proposed program¹⁴.

The indirect influence of cyclical economic activity on the implementation cost of support and supplementation through changes in the rate of growth of income is accompanied by a direct influence on cost because of changes in the number of individuals unemployed. For if support and supplementation is to be implemented in a year characterized by high unemployment, then impact costs, given a particular benefit structure, will be relatively high not only because of lower rates of income growth among the recipient population, but also because of the increased incidence of unemployment among families eligible to receive transfers. Though high unemployment rates imply smaller increases in income for those individuals remaining employed, it also means a reduction in normal income for those families whose members become unemployed. It follows that before an estimate of the impact cost of

13. Ibid, Appendix A, pp. 52

14. Ibid, pp. 31

implementing support and supplementation is accepted as even being reasonable, the methodology upon which the estimate is based must accommodate the direct influence of changes in the level of unemployment. Unfortunately, the estimating procedure used in the Report does not. This is the case even though income earners in the supplement category are recognized to be especially vulnerable to unemployment in periods of declining economic activity¹⁵.

In essence, the relationship between economic activity and the cost of support and supplementation is not at all reflected in the estimated impact costs presented in the Report simply because no attempt was made to incorporate the effects of cyclical economic activity into the methodology used for intertemporal transformation of the cross-section data base.

Consequences of Excluding the Influence of Cyclical Economic Activity

As a result of ignoring the influence of cyclical economic activity in the estimation procedure, there are two serious consequences for the cost estimates in the Report. The first is that the estimates of the gross impact cost of implementing support and supplementation in 1975 substantially underestimate the true impact costs. The second consequence is that the degree of the underestimation of the gross impact costs is actually exceeded by the degree of the underestimation of the net impact cost.

The argument with respect to the underestimation of the 1975 gross impact costs is straight forward. By recognizing that an economy is dynamic, then it must also be recognized that the unemployment rate fluctuates and, by implication, so will the cost of the proposed support and supplementation system. But the gross impact costs contained in the Report are estimates based

15. Ibid, pp. 31

upon a methodology which ignores cyclical economic activity and, as a consequence, the estimates cannot be expected to incorporate that portion of the cost of support and supplementation that is attributable to the decline of economic activity between the base year and 1975. Since no other effort has been undertaken to adjust estimates to reflect the changed economic conditions, it can only be concluded that the gross cost figures underestimate the true gross costs corresponding to 1975 economic conditions. Furthermore, the magnitude of the underestimate of the gross impact cost can be expected to be substantial because, as Table 2.1 indicates, the unemployment rates in 1975 significantly exceed the corresponding figures for 1973.

COMPARISON OF MONTHLY NATIONAL UNEMPLOYMENT RATES (UNADJUSTED) FOR THE YEARS 1973 AND 1975													TABLE 2.1
YEAR	MONTH												
	J	F	M	A	M	J	J	A	S	O	N	D	Ave.
1973	7.7	7.3	6.8	6.3	5.3	5.2	4.8	4.5	4.6	4.6	5.0	5.5	5.6
1975	8.4	8.6	8.6	8.1	7.1	6.8	6.2	6.0	5.9	5.8	6.4	7.0	7.1

Source: Statistics Canada

In light of the underestimation of 1975 gross impact cost, it is easy to see how the Report introduces an even more significant underestimate of net impact cost. To arrive at the net or additional cost involved in implementing the proposed program reform, the procedure employed¹⁶ subtracts from the underestimated gross costs, the portion of the actual 1975 expenditures on social assistance and unemployment insurance that would go to the recipients of support and/or supplementation transfers. However, because of the poor economic conditions of 1975, the expenditures on social assistance and unemployment insurance in 1975 are high compared to 1973. The conclusion

16. Ibid., pp. 47 - 50

is obvious. Subtracting high 1975 social assistance and unemployment insurance expenditures from an already underestimated gross impact cost for 1975 must result in an underestimate of net impact costs. Since it is the net, or additional cost above current government expenditures that are of primary importance to the decision making process, the significance of the underestimate of the net cost of implementing support and supplementation in the Report cannot be overstressed.

3. Problem: Incorrect Calculation of Net Costs

The net cost of implementing the proposed support and supplementation program can be viewed from one of two different perspectives. If the program is intended to replace all existing government transfer programs to which the support and supplementation recipient population currently has access, net costs must be calculated to measure the increase in government expenditures that are necessary to expand and reform the social security system. But if support and supplementation is implemented with the intention of only widening the coverage of the social security system to include low income families which receive few if any government transfers, then net costs must be calculated to measure the increase in government expenditures needed to expand without reforming the present transfer system. Recognizing that the proposed support and supplementation program is not intended to replace the existing transfer systems such as Unemployment Insurance and Workmen's Compensation, it is logical to expect that the net cost estimates in the Report measures the cost of adding an additional transfer program to the present social security system. Here lies the second serious problem in analysis: the method of calculating net cost employed by the Report estimates the cost of replacing the existing transfer programs with support and supplementation

rather than the cost of adding support and supplementation to the current existing transfer systems.

To illustrate the serious misrepresentation of net costs that results from the incorrect calculation of net costs, a simple numerical example is presented. Table 2.1 indicates that under a hypothetical support and supplementation program both family 1 and family 2 are eligible, on the basis of the families normal income, to receive an annual transfer of \$500. But during the year, family 2 receives \$850 in income from the Unemployment Insurance Commission and family 1 only \$100. At this point, the choice of which way to calculate net costs depends upon whether the intent of support and supplementation is to replace the existing transfer systems, in this case, UIC, or to only expand the coverage of the social security system to include family 1. If the proposed program is meant to replace UIC, an aggregate method of calculating net costs is required; but if the purpose of support and supplementation is only to insure that family 1 receives the \$500 transfer, net costs must be calculated family-by-family.

ILLUSTRATION OF THE CONSEQUENCES OF INCORRECTLY CALCULATING NET COST			TABLE 2.2
	<u>Family 1</u>	<u>Family 2</u>	
Normal Income (\$)	6000.	6000.	
S/S Transfer (\$)	500.	500.	
UIC Transfer (\$)	100.	850.	
<hr/>			
	<u>Net Cost Calculated Family-by-Family (\$)</u>	<u>Net Cost Calculated in the Aggregate (\$)</u>	
Family 1	400	500	
Family 2	<u>0</u>	<u>500</u>	
		Gross Cost	1000
		Less UIC	<u>950</u>
Net Cost	400	Net Cost	<u>50</u>

The aggregate calculation of net cost involves the summing of all potential support and supplementation transfers across all families to get an estimate of gross costs. In Table 2.2, it can be seen that calculated gross cost equals \$1,000. To arrive at the net cost, the expenditures of existing transfer program must be subtracted from the gross cost figure. With regard to the current example, it is clear that replacing UIC with the hypothetical support and supplementation program has increased government expenditures by only \$50. This is because the UIC benefit structure has been constrained to coincide with the benefit structure of the support and supplementation program. In effect, the new income transfer program has been partially financed by rationalizing UIC within the framework of support and supplementation.

The family-by-family approach to calculating net cost recognizes that the purpose of support and supplementation is not to replace existing government transfer systems, but rather to insure that all low income families receive at least the support and supplementation transfer to which they are entitled. In this situation, because family 2 is more than adequately covered by UIC, there is zero net cost associated with family 2. But family 1 receives only \$100 in UIC payments. The net cost of expanding the social security system to include family 1 is \$400. By summing the net costs family-by-family, the total net cost of implementing support and supplementation is calculated.

A comparison of the net costs in the bottom line of Table 2.2 indicates that the different approaches to calculating net cost leads to very different conclusions. Calculating net cost family-by-family yields an estimate that is many times larger than is calculated with the aggregate method. The implication of the net cost estimates in the Report is clear. The net cost estimates have been calculated by a method that implicitly

assumes existing transfer programs will be rationalized within the framework of support and supplementation. In fact this is not the situation. The net cost estimates seriously misrepresent the true cost of implementing the proposed programs. In chapter IV, it will be seen that the magnitude of the underestimate of net cost is in the order of 100 per cent.

CHAPTER III

ONTARIO'S APPROACH TO ESTIMATING THE COST OF SUPPORT AND SUPPLEMENTATION

This chapter focuses on costs which result from direct transfers to persons in the form of support and supplementation benefits and ignores non-transfer costs associated with added administration, negative labour supply response, and disincentives to save. Discussion will further be restricted to the net, or additional, cost of social security reform which are over and above the current expenditures on Ontario social assistance programs such as Family Benefits Allowances (FBA) and General Welfare Assistance (GWA). As well, the chapter briefly outlines the method of expanding the experience simulated in Ontario for all of Canada.

To facilitate exposition, the target population for support and supplementation is divided into two broad groups:

GROUP A. Population currently on Ontario social assistance programs: FBA, GWA; and,

GROUP B. Population eligible for current social assistance programs but which, for whatever the reasons, has avoided welfare, and the working poor who would be eligible for supplementation benefits under the Review proposals.

Assuming that the reformed social security system will cover the existing target population in group A, the additional or net costs arise mainly because of target group B. The objective is to obtain an indication of the potential net additional costs which would be incurred if the latter group start receiving social security benefits. This will be achieved by

simulating support and supplementation on an income-tested basis and delivered as a negative income tax in a non-stigmatic manner via the existing taxation infrastructure. In this case, it is assumed that anyone who is eligible to receive social security benefits will claim them with no more stigma than that involved in claiming provincial tax credits or tax refunds. The objectives and assumptions for the purpose of assessing potential cost are identical to the ones used in the Report.

Some indication of the magnitude of potential additional cost can be obtained from the Survey of Consumer Finances (SCF) family size and income distributions for 1973, the latest year in which the survey was conducted. However, these costs relate to the economic conditions prevailing in that year. The important costs are those in future years such as 1976, 1978 or 1981, years in which the proposals may be implemented and in years following the implementation. The expenditures are not a one-time occurrence, since ongoing costs also form a major share of the expenditure package. Therefore, it is necessary to estimate these costs to comprehend the totality of the program structure.

The cost estimation followed in this section will separate the cost of social security reform on group A and group B. For group A in Ontario, data is available both on time series basis and on a detailed cross-section family and income profile. Marginal increases in cost as a result of changing social assistance from a needs-tested to an income-tested basis can easily be computed from the Provincial data sources. A "guesstimate" is that the cost increase on the current caseload in group A would be less than four per cent. It is noted parenthetically that no appreciable cost would be involved in adopting the benefit structure used in calculations in the Report since this structure is no more generous than the current Ontario Family Benefits Allowance and General Welfare Assistance rates.

Having mentioned this component of net cost, the remainder of the section primarily addresses the question of net cost estimation for group B, that is, the target population currently not on welfare. For the latter, given the benefit structure and tax back rates, the net support and supplementation costs can easily be calculated from SCF cross-section data on income distributions and family composition for 1973. Before this is undertaken, two critical but independent questions must be addressed: the dynamic extrapolation of economic conditions from 1973 and the removal of systematic biases in the data.

Knowing the costs for 1973, which relate to economic conditions of that year, it is necessary to estimate the costs in the year in which the proposals may be implemented and in the years following. This will involve the design of a suitable method to vary the cost estimates in response to changing economic conditions.

As is noted in part B of this chapter, the SCF data itself has some systematic biases in crucially important expenditure items which will affect the costing of support and supplementation. Corrective action to counteract these biases is warranted. The corrective measures employed here are substantially different from those employed by the Report. The importance of these differences will become evident in the next chapter when cost estimates using the Ontario method are compared with the Report.

A. COST ESTIMATION TECHNIQUE

1. Rationale for the Methodology

The Ontario approach takes an indirect route in order to circumvent the constraint imposed by the lack of time series data on target group B.

It contends that the net cost on this group is likely to be at least as sensitive to cyclical influences as the current welfare costs on programs such as Family Benefits Assistance and General Welfare Assistance. Expenditure and caseload data on the latter group are available from Provincial sources. Since it is possible to estimate how the expenditures on group A behave under different economic conditions, this behaviour is used as a guide in assessing cost fluctuations of support and supplementation on group B.

The two most crucial and important cost factors are inflation and changes in unemployment. Insofar as the influence of inflation is concerned, the benefit structures in Family Benefits Assistance and General Welfare Assistance are not indexed to the increases in cost of living, however the Ontario Government has maintained the real benefit level by periodic benefit increases. In the costing, the same treatment is accorded to the new target group.

When it comes to assessing the impact of a rise in the unemployment rate on new target groups relative to the current caseload, two factors exert an influence. There are the direct costs related to the increased number of eligible families and the additional indirect costs as a result of the actual decline or slower growth in family earned income.

With respect to the direct effect, a rise in unemployment causes the welfare caseload to increase in group A. It is reasonable to expect that the number of families in the additional target group B also rises because of the lack of jobs, and as real earned income fails to rise in slack periods, additional families become eligible for support and supplementation benefits. Since only 15 per cent of the caseload on welfare in the years 1973-74 in Ontario was caused by unemployment, and since the families in the new target group B have relatively substantial labour force attachment, the number in the

latter group is likely to increase by at least as much as the current caseload when economic conditions deteriorate.

The indirect impact of slack economic conditions on costs is likely to be even more severe than the direct costs. The earnings of families currently on welfare, in the vast majority of cases, are non-existent. There is no incentive to seek remunerative employment regardless of the availability of opportunities because of the high tax-back rate.

On the other hand, families in the new target group B have substantial labour force attachment. The majority are working poor because of low wages and/or large family sizes. Most of the family heads are in unskilled, non-unionized or poorly organized occupations. The earnings of these groups are recognized to rise slowly or even decline in real terms during economic slowdowns. Cost implications for support and supplementation are quite obvious. If real earned income fluctuates relative to the earnings of the current welfare caseload, then the costs of group B would be at least as sensitive to cyclical factors as the costs of the current programs. Given this cyclical sensitivity, it is possible to put a lower bound on the dynamic cost of welfare reform as economic conditions deteriorate, by estimating the cyclical sensitivity of current welfare programs.

Thus, the problem of estimating net costs of including new target groups becomes one of estimating change in costs of current welfare programs under different economic conditions. The latter is a tractable problem since historical time series information is available both at the provincial and national levels. This method is used as a guide in predicting the net costs of implementing support and supplementation in a dynamic economic environment.

2. The Extrapolation Technique

Model Specification

The objective of the statistical relation set out below is to provide a method to forecast future costs of support and supplementation. In the relationship it is assumed that social assistance expenditures are a function of population, the unemployment rate, inflation, and changes in other major welfare programs like Unemployment Insurance. In addition, one would expect a time trend to capture the gradual easing of eligibility criteria and the improvement in real benefits on a per capita basis. Considering the number of independent explanatory variables and length of time for which the time series data is available, estimation is on a quarterly basis. Experimentation with the data indicated that a log-linear specification was appropriate. The estimated relation is as below:

$$\begin{aligned} \text{SA} = & \text{Exp} \left(\begin{array}{ccccccc} -5.92188 & + & .018508 * \text{Time} & - & .000465958 * & \frac{\text{UIB}}{\text{UE} * \text{CPI}} & - & 5.20798 * \text{RCPI} \\ (133.80) & & (12.84) & & (2.23) & & (4.46) \end{array} \right. \\ & + .04551 * \text{URO} + .03591 * \text{URO} (-1) + .02630 * \text{URO} (-2) \\ & \quad \quad \quad (3.79) \quad \quad \quad (9.54) \\ & + .01670 * \text{URO} (-3) + .007097 * \text{URO} (-4)) * \text{CPI} * \text{POPO} \\ & \quad \quad \quad (3.79) \quad \quad \quad (1.01) \end{aligned}$$

$$\overline{R}^2 = .99 \quad \text{DW} = 2.01 \quad \text{Period} = 67 \text{ II to } 75 \text{ I}$$

Regressand was $\log (\text{SA}/[\text{CPI} * \text{POPO}])$

where

- SA - social assistance expenditures on GWA, FBA, millions of current dollars
- UIB - Unemployment Insurance benefits, millions of current dollars
- UE - Number of unemployed, in thousands
- CPI - Consumer Price Index
- RCPI - Rate of change in Consumer Price Index
- URO - Unemployment rate in Ontario, per cent
- POPO - Ontario population, in thousands

The test statistics are highly significant and the signs of coefficients are as expected. The estimated relation was normalized to per capita real terms, to ensure that the expenditures in current dollars will rise in direct proportion to changes in population and inflation.

Distributed lags on the unemployment rate are used because of the quarterly model specification. Unemployment experience over a period of 12 to 15 months, which is reflected in the lag structure, seems appropriate to use since there will be cases on welfare who became eligible in the past quarters and are still on welfare, or they became eligible to receive welfare in the current quarter because of continued high unemployment in the past year. The coefficients in the lag structure indicate that the influence of the past level of unemployment declines more or less linearly until in the last quarter when the influence is of marginal significance.

The variable $\frac{UIB}{UE \cdot CPI}$ is a proxy to represent the ease of availability and the level of benefit available from UIC. By liberalizing the availability and level of this benefit source, there will be less need for welfare which will lower the social assistance expenditures.

With regard to RCPI, there is no a priori reason to expect the coefficient to be either positive or negative in sign. Two opposing factors determine the sign. In periods of high inflation, the resistance to go on welfare is reduced. This should tend to make the sign positive. However, in such times, the local welfare authorities also tend to tighten the reins. The estimated relation says that over the sample period 1967-74 the second factor has been stronger.

Inclusion of a time variable in the estimated relation requires more detailed justification. Unquestionably, if the benefit structure in support and supplementation improves in real terms in line with a rise in community living standards, as has been the long-term historical experience, the

coefficient of the time variable would partly capture this effect. The inclusion of time variable is justified on this count alone.

Much more important than the real rise in benefit structure are the delivery system, tax-back rates, and possible negative labour force response. For example, if the reformed welfare system is administered via the existing transfer mechanism, the question of degree of pick-up becomes critical. The time trend is justified due to gradual acceptance of welfare by the new target groups in the absence of any definitive research on this topic.

Since the final tax-back rates are unknown, a tax-back rate for supplementation was set at 33 per cent. There is no doubt that whatever rate the tax back was set at, there will be pressures to lower it. To the extent that these pressures are successful, the impact is reflected in the time variables.

For the reasons alluded to above, inclusion of the time trend in the model seems justified, although its coefficient might have to be adjusted once the program design and delivery mechanism is known. It is emphasized, however, that tinkering with the time coefficient is unlikely to affect the net cost estimates to any appreciable degree.

B. DERIVATION OF NET COST OF SUPPORT AND SUPPLEMENTATION FOR 1973

The concern here is how to obtain a reliable estimate of the cost under 1973 economic conditions from the SCF cross-section data on family income and composition. The method at this step differs from the Report in two crucial ways. First, it not only recognizes the limitations of the SCF data but takes appropriate corrective measures. Second, the offsetting procedure to account for other welfare program expenditures used in derivation of net costs is more

realistic in view of the fact that support and supplementation is not intended to replace a vast complex of other programs such as Unemployment Insurance, Workmen's Compensation, War Veterans' benefits, etc.

The logic of the method presented in this step becomes self-evident as the limitations of the Survey of Consumer Finance data are reviewed. The method itself is described after this review.

1. Systematic Biases in SCF Data Base and Corrective Measures

The main objective of the SCF has been to determine the demographic and income characteristics of the Canadian population. Although the survey was not specifically designed to cost social security reforms, it has almost exclusively been used to evaluate cost implications of the different reform proposals. There are some very systematic biases in the survey which result in a large underestimation of certain categories of transfer expenditures on social assistance and unemployment insurance. A reliable estimation of these expenditures is of critical importance for costing the Review proposals. The sole objective of the Review is to replace the existing inadequate social assistance system with an expanded, non-stigmatic one. Unless an attempt is made to first understand the dominant cause or causes responsible for the underestimation of social assistance and unemployment insurance benefits in SCF and second, take appropriate corrective action, the use of the data source in the existing form will give misleading and incorrect cost estimates.

In any sample survey, apart from sampling errors and the errors due to less-than-perfect weighting schemes, errors in survey estimates may occur due to non-reporting, under-reporting or inaccurate reporting. In addition, there is always a certain degree of non-response from the population included in the design of the survey. The surveys in general take this non-response

into account by establishing weights that are attached to a sampled individual or family. The problem of non-response is relatively easy to handle if there is no compelling reason to believe that it is higher in any particular group as opposed to the rest of the sampled population.

Although all the abovementioned factors would be present in the SCF, it is non-response that is by far the most dominant in causing underestimation of social assistance and unemployment insurance benefits. Among the categories of transfer payment beneficiaries, non-response from the social assistance and unemployment insurance population is likely to be far above the normal non-response because of a great deal of psychological stigma and real or imagined adverse economic consequence that this population may fear if they responded to SCF questions. These recipients have revealed varying degrees of personal and financial information to the relevant authorities and have gone through a degrading experience in establishing the claim to benefits. They have little incentive to go through these details again and in fact, may fear that the SCF itself may be a disguised probing to monitor their activities.

No doubt the SCF promises confidentiality. However, breaching of such promises by the Unemployment Insurance Commission and other welfare authorities is not unknown to the recipient population. In view of this, it is much easier, safer and convenient to completely avoid the survey questionnaire and the ensuing interviews.

It would also be consistent with the above reasoning that if an individual or family does decide to respond to the SCF, it would be illogical to deliberately falsify the information. Indeed, the respondent would take pains to ensure that information provided to SCF does not in any way contradict the previous declarations made to various authorities. To recapitulate, the assertion is that among social assistance and unemployment insurance

beneficiaries, motives not to respond to SCF are strong. However, if they do decide to respond to the survey, they would provide accurate information.

From Table 3.1 which compares estimates of selected categories of transfer payments from SCF with National Accounts, it is clear that the SCF estimates are reasonable for most categories. Estimates of expenditures on programs such as Old Age Security, Guaranteed Income Supplement, Family and Youth Allowances, and Canada/Quebec Pension Plan are fairly good. The error in general is less than ten per cent.

COMPARISON OF SCF ESTIMATES OF SELECTED TRANSFER PAYMENTS WITH NATIONAL ACCOUNTS, 1973					TABLE 3.1
	National Accounts (1)	SCF Census Family Records (2)	$\frac{\text{SCF}}{\text{NA}}$ (2)÷(1)	SCF Individual Records (4)	$\frac{\text{SCF}}{\text{NA}}$ (4)÷(1)
Family & Youth Allowance	796	725	.91	794	.99
Old Age Security & Guaranteed Income Supplement	1,857 647 2,504	2,570	1.03	2,450	.98
Canada/Quebec Pension Plan Benefits	351	337	.96	335	.95
Unemployment Insurance Benefits	2,002	1,340	.67	1,390	.69
Social Assistance	1,184	626	.53	639	.54

It is clear from the data that there is no non-response problem with OAS, GIS, CPP/QPP and Family Allowances. These are non-stigmatized programs and they are very difficult to cheat. It appears that only in the programs which are stigmatized and easily cheated that the non-response problem occurs. Obviously the UIC and social assistance programs fit this description.

Although the new Unemployment Insurance Act has made it easier to obtain benefits, it has not removed all the stigma that is attached to being unemployed and going on unemployment insurance benefits. Long line-ups from booth to booth are frequent in Canada Manpower Centres where recipients must report on job search and obtain leads for openings. Further, while it may have been easier in 1973 to establish a claim to benefits, maintenance of eligibility becomes increasingly difficult and stigmatic with time. Interviews and monitoring of job search become increasingly stringent, and rules for disqualification applied more strictly. Even home visits by field workers are made at later stages of the eligibility period to determine possible transition to General Welfare Assistance. Thus, this program remains relatively stigmatized. Furthermore, a beneficiary would have supplied the Unemployment Insurance Commission and Canada Manpower authorities a great deal of information on job search and family financial situation. Therefore, the incentive to avoid the SCF questionnaire and interviews would exist for the reasons mentioned earlier.

In SCF information on number of weeks unemployed and looking for work is coded for the head of the census family, and wife where applicable. If all these weeks are added and a rough adjustment made for a possible third person unemployed in the census family, an estimate of total man weeks unemployed according to SCF is obtained. An estimate of the number of persons unemployed month by month and also the average for the whole year is also available from the Labour Force Survey. The latter can easily be converted to man weeks unemployed for the whole year. When the SCF estimate is compared with the Labour Force Survey, the former is only 75 per cent of the latter. This not only provides additional evidence that the unemployed population is under-represented in the SCF, but also gives a yardstick by which to make the sample

in SCF more representative for the unemployed. It suggests a weight adjustment by a factor of 1.32 for all records reporting incidence of unemployment in the SCF. When this adjustment is made, the results are as in Table 3.2.

COMPARISON OF NATIONAL ACCOUNTS AND SCF ESTIMATES OF UNEMPLOYMENT INSURANCE BENEFITS BEFORE AND AFTER WEIGHT ADJUSTMENT, CANADA			TABLE 3.2
	N.A.	SCF	$\frac{\text{SCF}}{\text{N.A.}}$
UIB 71	941	380	.40
UIB 73	2,002	1,340	.67
UIB 73 (after weight adjustment)	2,002	1,767	.88

Thus, to summarize SCF estimate improves from 40 per cent in 1971 to 67 per cent, the actual in 1973. This improvement is attributed to decline in non-response in 1973 because of reduction in stigma and easier eligibility criteria to receive unemployment insurance benefits in 1973. Further, when weight adjustment to correct for non-response is made, the SCF estimate of unemployment insurance benefits further improves to 88 per cent of the actual in 1973.

The remainder of the difference between the SCF estimate and the actual situation in 1973 may be attributed to a variety of factors. Within the unemployed, the non-response may be higher among those who in fact receive unemployment insurance benefits as opposed to those who do not. Further, SCF would miss out target groups like fishermen who would be away at the time of survey. Finally, as noted earlier, the weighting scheme is far from perfect. The SCF estimate of unemployment insurance benefits from individual records is slightly better in 1973 than from the census family records. All these

factors noted above would tend to make the SCF estimates lower than actual. However, it is emphasized that the SCF data base adjusted for non-response in 1973, gives an estimate of 88 per cent of actual. This is a large improvement over the unadjusted 1971 figure used in the initial analysis by the Working Party on Income Maintenance.

It was argued that in the case of unemployment insurance benefits motives for non-response are strong. These are even stronger in the case of social assistance beneficiaries especially since the target groups of the two programs overlap. One component of the social assistance population, namely, the employable unemployed, receive welfare benefits if either they have exhausted, or were ineligible to receive, unemployment insurance benefits. In any event, there is a high degree of stigma because of the amount of intimate financial and personal information provided to authorities relative to unemployment insurance benefits. Verification of formal declarations made by the applicant for social assistance, by the social worker at home and even in the neighbourhood and community, is a usual practice to establish eligibility and need. Consequently, this reinforces the stigma and the chances of providing contradictory or damaging information to SCF are high. Disqualification from UIC benefits results in some beneficiaries going on welfare; however, once disqualified from receiving welfare, there is nowhere to go. Thus, the motive for non-response is strong, in fact stronger than in the case of unemployment insurance. On the other hand, having decided to respond to SCF, the respondent has little to gain by deliberately falsifying the information. On the contrary, one would expect that those who respond would be extremely careful that the information they provide does not in any way contradict the affidavits and legal declarations they have already made to welfare authorities for fear of losing eligibility.

To further support the argument, it is noted that more than half the share of CPP/QPP payments are made to widows and the disabled but in this case there was no problem of underestimation in SCF. The difference must be attributed to the manner in which social assistance programs are administered. The assertion that non-response is the major factor in underestimating SCF social assistance expenditures must rest on the strength of this evidence and logical reasoning. It is not possible to search the records in the SCF for characteristics of social assistance recipients because of the pick-up problem. That is, one expects that there would be a large number of cases which by all criteria would be eligible to receive welfare, but are not on welfare for some reason. Indeed, one of the results of the implementation of support and supplementation will be an indication of how many families are eligible for social assistance but who do not apply for it.

To account for the non-response problem inherent in the SCF social assistance population, this group has been ignored in the overall analysis of the data. Instead Provincial data, which is far more accurate, has been used to calculate the net cost associated with this group in the implementation of support and supplementation.

2. Estimation of Net Support and Supplementation Costs

In the methodology presented here, attention is focused primarily to estimate the cost of support and supplementation of group B, that is, the additional target group which is not currently on Ontario social assistance program. A small adjustment is made, however, for net costs on current welfare programs which would result from making the benefits income-tested as opposed to needs-tested. As noted before, an educated guess is that the cost due to this change would not exceed four per cent of current expenditures.

For the new target group B, net cost estimation is performed in two stages. First, given the benefit structure for support and supplementation, family income and its composition, and the tax-back rates for earned and transfer income, the calculation of benefits is straightforward. For the 1973 SCF data, aggregating over all families gives the gross cost.

Basically, the same procedure is followed in the Report. In the method here, however, there are two important distinctions, the significance of which cannot be overemphasized. One, a weight adjustment is made to correct for under-representation of the unemployed population in the SCF. Two, in the analysis of a family record, if the family in question is financially better off without support and supplementation as calculated on the basis of normal income, then no cost is imputed for this particular family. Cases of this type would arise because of the presence of other welfare programs such as Unemployment Insurance, Workmen's Compensation, War Veterans' pensions, etc. To elaborate on the importance of this difference from the Report, there are cases in the data base where a family obtains substantial unemployment insurance. At the same time the family has low earned income. If benefits from unemployment insurance exceed support and supplementation, this particular family is better off with unemployment insurance than support and supplementation.

Inasmuch as social security reform is not intended to replace the vast complex of inter-related existing programs, and also since there is no compulsion that a family must apply for support and supplementation, it seems logical that a family in the circumstances described above would prefer the program under which it is financially better off.

It would seem highly unlikely to compute a positive support and supplementation payment for a family and then deduct large transfer payments

from other programs. The net effect of such computations would be to impute a negative support and supplementation cost because of situations of the type described. A family better off on unemployment insurance is not likely to voluntarily surrender benefits in excess of the support and supplementation entitlement to the welfare authorities. The significance of this single and innocent-looking deviation from the Report method is enormous as will be made clear in the next chapter. The computed gross costs for 1973 are adjusted downward slightly to account for small receipts from other welfare programs to get the net cost for 1973. The second stage applies the dynamic cost extrapolation technique to arrive at the net cost of the program for years other than 1973.

Throughout this paper, emphasis has been on estimation of the net cost of social security reform for the Province of Ontario. This has been necessitated for several reasons. The primary interest lies in direct costs to Ontario, although the high cost of the program for the country as a whole may add significant indirect costs. Other reasons include greater familiarity with the Provincial welfare programs and the availability of the time series data on the programs on a consistent basis.

However, inference can be drawn for Canada as a whole from the cost analysis for Ontario. It is observed that for the period 1967-74, although Ontario had approximately 36 per cent of the Canadian population, the welfare expenditures in Ontario have been roughly one-quarter of the Canadian total. As a rough indication of net cost for Canada, estimated Ontario net cost is multiplied by a factor of four on the assumption that the historical relation remains stable.

CHAPTER IV

ESTIMATES OF THE NET COST OF IMPLEMENTING THE PROPOSED INCOME SUPPORT AND SUPPLEMENTATION SYSTEM

This chapter presents estimates of the net cost of implementing the proposed income support and supplementation program in both Ontario and Canada. The estimates indicate that the actual incremental cost of implementing support and supplementation will substantially exceed the net cost estimates provided by the Working Party on Income Maintenance in its Quantitative Report on Income Support and Supplementation. The difference in the net cost estimates, as explained in chapters II and III, can be attributed to the elimination of two serious problems in analysis and the correction of a systematic bias in the Survey of Consumer Finances (1973). As a consequence of the new and more representative net cost estimates, the scope and objective of the proposals of the Federal-Provincial Social Security Review will undoubtedly be viewed in a different light.

A. OUTLINE OF THE ESTIMATION PROCEDURES

Before a complete set of net cost estimates is presented, it is instructive to outline the basic steps in the estimating procedures employed. The estimation of net cost requires the interfacing of cross-section simulation methods with an econometrically-estimated model which incorporates the cyclical behaviour of a dynamic economy. Consequently, the estimation technique is divided into two steps: first, simulation; second, extrapolation.

1. Cross-Section Cost Simulation

For completeness and purposes of comparison, simulating the introduction of support and supplementation in order to estimate 1973 net costs was done in three different ways. The first approach parallels the methodology employed in the Report except no attempt has been made to extrapolate the cross-section data. This approach, since it is a variation of the actual method sanctioned by the Working Party on Income Maintenance, has been termed the Modified Working Party Method (MWPM). The second approach is similar to the MWPM, but instead of calculating net cost by offsetting estimated gross costs in the aggregate, the offsetting procedure is done at the family level. However, it is the third cross-section simulation procedure used in the study that produces the most accurate estimate of net cost. This method is similar to the second except that in order to compensate for particular systematic biases in Survey of Consumer Finances (1973), the sample weights of families reporting unemployment are increased by 32 per cent and the families reporting social assistance transfers are ignored.

Each of the three approaches to estimating the net cost of implementing support and supplementation in 1973 used the benefit structure described in Table 4.1. The benefit structure chosen is comparable to the benefit structure associated with the "central" estimate of the Quantitative Report; to make the 1975 benefit structure applicable to the 1973 survey data, it has been de-indexed by 26.54 per cent.¹

1. This follows the methodology employed in the Quantitative Report on Income Support and Supplementation, Appendix A, p. 76.

DE-INDEXED BENEFIT STRUCTURE COMPARABLE TO
1975 BENEFIT STRUCTURE FOR THE "CENTRAL" ESTIMATE

TABLE 4.1

1. Annual Benefit Levels

	<u>Maximum Supplement</u> ($\$$)	<u>Maximum Support</u> ($\$$)
First adult	948.	1,833.
Spouse	585.	1,130.
Dependent over 17	585.	1,130.
Dependent under 18	454.	612.

note: (a) benefit levels include family allowances; and
(b) in all one-parent families, the first dependent under 18 is allotted the adult benefit.

2. Tax-Back Rates

<u>Supplement</u> (%)	<u>Support</u> (%)
33-1/3	100

3. Income Exemption

	<u>Supplement</u> ($\$$)	<u>Support</u> ($\$$)
First adult	0.0	611.
Spouse	0.0	377.
Dependent over 17	0.0	377.
Dependent under 18	0.0	134.

4. Income Base

Support and supplementation payments are computed on normal family income after deducting:

- (a) CPP and UIC contributions;
- (b) family income taxes; and
- (c) work-related expenses of 3 per cent of earned income to a maximum of \$118.

5. Eligibility

All family units with head and spouse under the age of 65 are potential recipients of both supplementation and support.

Table 4.2 presents a summary of the estimated 1973 net impact costs of implementing support and supplementation in the Province of Ontario.¹ Because the substantial differences in the magnitudes of these estimated net impact costs are so clearly dependent upon the selected cost simulation method, the implications of each estimate will be discussed separately.

ESTIMATES OF THE NET COSTS OF IMPLEMENTING INCOME SUPPORT AND SUPPLEMENTATION IN ONTARIO, 1973. (\$ Million)			TABLE 4.2
Modified Working Party Method	Ontario Method I	Ontario Method II	
164.8	358.6	411.2	

Modified Working Party Method

As pointed out in chapter II, a methodology which calculates net costs in the aggregate and not by individual families, implicitly assumes a complete rationalization of all existing transfer programs within the structure of the proposed income support and supplementation system. And since the MWPM calculates net cost in the aggregate, the \$164.8 million does not represent the cost of adding an additional transfer program to the existing set of programs, but rather it is an estimate of the cost of replacing the numerous existing programs with a single uniform transfer system. But income support and supplementation is being proposed as an additional program to help the "working poor" and, as a consequence, an appropriate net cost estimate must be calculated to reflect the cost of adding yet another transfer program to all the existing programs.

1. For details of calculations, see Appendix C of this study.

Ontario Method I

Ontario Method I, which offsets other government transfer programs family-by-family, yields a net cost estimate of \$358.6 million, which is more than twice the estimate resulting from the MWPM. The nearly \$200.0 million difference between the two estimates is a measure of the 1973 cost of adding support and supplementation to the then existing transfer programs instead of rationalizing the transfer programs within the structure of the new program. Since support and supplementation is indeed an "add-on" program, and since the \$164.8 million estimate has been shown not to contain any "add-on" costs, then the \$358.6 million net cost estimate must be the more legitimate of the two estimates.

Ontario Method II

Chapter III indicated that before the Survey of Consumer Finances (1973) could yield satisfactory estimates of the cost of implementing support and supplementation, the data base would have to be altered to mitigate the influence of systematic biases. In particular, the corrective measures require that sampled families in receipt of social assistance income be ignored and that the sample weight of families reporting unemployment be increased by 32 per cent. As might be expected, this additional step results in increased net cost. As Table 4.2 indicates, the alternation of the Survey of Consumer Finance data base results in a further \$52.6 million increase in estimated 1973 net costs.

The \$52.6 million increase should be recognized as underestimating the actual increase in the 1973 net cost due to the corrections applied to the data base. This is because, as a result of omitting from the cross-section simulation families which receive social assistance transfers, the estimated

\$411.2 million does not include the additional costs that might result from the application of a purely income-tested benefit structure to a client group which traditionally have received needs-tested benefits.

2. Extrapolating Net Impact Costs

The second step of the two-part estimation procedure is to extrapolate the estimated 1973 net costs to forecast the net impact costs of implementing support and supplementation in Ontario for years other than 1973. To accomplish this, the econometric model embodying the cyclical behaviour of social assistance expenditures in Ontario has been used. The model, as it has been explained in chapter III, can be expected to be a good representation of the cyclical behaviour of the net costs of the proposed income support and supplementation program.

The conceptual application of the model is straightforward. By specifying levels of unemployment and rates of inflation for the years between 1973 and the year of implementation of support and supplementation, the model will forecast the associated net costs. In this way, not only can the net impact costs for a particular year be forecast, but also a series of forecasts for various years with various levels of unemployment and rates of inflation can be calculated. Comparing a variety of forecast series will reveal the sensitivity of the net cost of support and supplementation to the cyclical behaviour of a dynamic economy.

The results of applying the estimated behavioural model to the results of the cross-section net cost simulations are presented in the following section.

B. ESTIMATES OF THE NET COST OF IMPLEMENTING INCOME SUPPORT
AND SUPPLEMENTATION IN ONTARIO, 1973-1978

Tables 4.3 and 4.4 present estimates of the net cost of implementing the proposed income support and supplementation system in the Province of Ontario in each of the years 1973 to 1978. The first table contains estimates based upon the naive assumptions that the net costs of the program will increase only because of increases in the general price level and in the province's population; accordingly, these estimates are termed as being static. Table 4.4 contains future net cost estimates resulting from the application of the econometrically estimated behavioural model. Because these figures reflect the influences of changing economic conditions, they have been classified as being dynamic net cost estimates.

STATIC ESTIMATES ¹ OF THE NET COST OF IMPLEMENTING INCOME SUPPORT AND SUPPLEMENTATION IN ONTARIO, 1973-1978 (\$ Million)				TABLE 4.3
Year	Modified WPIM Method	Ontario Method I	Ontario Method II	
1973	164.8	358.6	411.2	
1974	186.1	404.9	464.2	
1975	209.8	456.7	523.7	
1976	232.9	506.9	581.3	
1977	256.2	557.6	639.4	
1978	279.2	607.8	696.9	
1. Actual inflation rates were used for years 1974 and 1975. Inflation rates for 1976-1978 were assumed to be 9.0, 8.0 and 7.0 respectively. In each year the population was assumed to grow by 2.0 per cent.				

Discussion of the Net Cost Estimates for Ontario

A comparison of net cost estimates in the two tables leads to a number of interesting observations. The first is that an estimation procedure which ignores the influence of cyclical economic behaviour upon the net program cost is likely to seriously underestimate future costs. For even with relatively optimistic assumptions about the future rates of unemployment and inflation used to compute the figures in Table 4.4, it can be seen that static net cost estimates substantially underestimate corresponding dynamic estimates.

The second observation of note is that the magnitude of the net cost estimate still depends directly upon how the program is assumed to be implemented. If support and supplementation is to replace existing government transfer programs that are available to the new program recipients, then the Modified Working Party Method yields the appropriate net cost figure to be extrapolated. But if support and supplementation is to be an "add-on" program, then net costs must be calculated using Ontario Method I. As a corollary, it must be recognized that if 1973 net costs are estimated with a methodology which implicitly assumes a replacement program when it is in fact an "add-on" program, then significant misrepresentation of costs will result. For example, Table 4.4 indicates that as an "add-on" program, support and supplementation net cost for 1977 would be \$860.3 million, but as a replacement program it would involve \$395.4 million. In this case, the application of the wrong definition of net cost would have resulted in a \$464.9 million error.

The third interesting observation is that the alteration of the Survey of Consumer Finance data base increases estimated net costs by a relatively small amount. Still referring to the 1977 dynamic costs, a change in the method of calculating of net costs results in a \$464.9 million increase

in costs, but the correction of the systematic biases leads to only a \$126.2 million increase. Thus, about 12.7 per cent of the estimated \$986.5 million net cost of implementing support and supplementation in 1977 is attributed to the modification of the 1973 data base.

DYNAMIC ESTIMATES ¹ OF THE NET COST OF IMPLEMENTING INCOME SUPPORT AND SUPPLEMENTATION IN ONTARIO, 1973-1978 (\$ Million)			TABLE 4.4
Year	Modified WPIM Method	Ontario Method I	Ontario Method II
1973	164.8	358.6	411.2
1974	190.3	414.2	474.9
1975	286.4	623.2	714.7
1976	350.0	761.7	873.7
1977	395.4	860.3	986.5
1978	440.2	957.8	1,098.4
1. Actual levels of unemployment and inflation are used for years 1974 and 1975. Unemployment for the years 1976-1978 were assumed to be 5.5, 5.0 and 4.5 per cent respectively. Inflation rates for the corresponding period were assumed to be 9.0, 8.0 and 7.0 per cent.			

The final observation of interest is the actual magnitudes of the net costs of implementing support and supplementation in Ontario. The Report estimates that the 1975 net cost of implementing the proposed program across Canada would have been \$1,135 million. Considering that Table 4.4 indicates that the net cost of implementing support and supplementation in Ontario alone would have been \$714.7 million, the federal estimate seems unreasonably small.

C. ESTIMATES OF THE NET COST OF IMPLEMENTING INCOME SUPPORT
AND SUPPLEMENTATION IN CANADA, 1973-1978

Because the estimated model used to extrapolate net cost embodies economic behaviour that is indigenous to the province of Ontario, it was inappropriate to apply the same model to 1973 net cost estimates for Canada. However, since it has been argued that a model explaining provincial social assistance expenditure is acceptable for purposes of extrapolating the provincial net cost of implementing support and supplementation, then it can also be argued that the relationship between Ontario's estimated net cost and the net cost for Canada would be similar to the relationship between Ontario's expenditures on social assistance and social assistance expenditures for Canada. Table 4.5 indicates that Ontario's share of expenditures on social assistance has been, on the average, about 25 per cent of all expenditures on social assistance in Canada. By applying this simple rule-of-thumb to the net cost estimates in Table 4.4, reasonable estimates for the net cost of implementing income support and supplementation across Canada can be calculated. The results are found in Table 4.6.

ONTARIO SOCIAL ASSISTANCE TRANSFERS AS A SHARE OF TOTAL SOCIAL ASSISTANCE TRANSFERS IN CANADA (\$ Million)			TABLE 4.5
Year	Ontario ¹	Canada ²	%
1967	127	515	24.7
1968	151	621	24.3
1969	165	674	24.5
1970	217	805	27.0
1971	277	1,037	26.7
1972	288	1,061	27.1
1973	291	1,184	24.6
1974	352 ³	1,422 ³	24.8
1975	430 ³	1,700 ³	25.3
1. Internal Sources. 2. National Accounts, Statistics Canada. 3. Preliminary estimate for 1975.			

Discussion of Net Cost Estimates for Canada

Most of the discussion about the estimated net cost of implementing income support and supplementation in Canada parallels the discussion of estimated net costs for Ontario and need not be repeated here. What is different in this section is that estimates which profess to measure the net cost of the same program structure in the same year can be compared. In particular, the reader's attention is drawn to the fact that the Ontario method of estimating 1975 net cost yields an estimate of \$2,858.8 million compared to the \$1,135.0 million net cost estimate of the Report.

DYNAMIC ESTIMATES OF THE NET COSTS OF IMPLEMENTING INCOME SUPPORT AND SUPPLEMENTATION IN CANADA, 1973-1978				TABLE 4.6
Year	Modified WPIM Method	Ontario Method I	Ontario Method II	Actual WPIM Method
1973	659.2	1,434.4	1,644.8	N/A
1974	761.2	1,656.8	1,899.6	N/A
1975	1,145.6	2,492.8	2,858.8	1,135.0
1976	1,400.0	3,046.8	3,493.6	N/A
1977	1,581.6	3,441.2	3,946.0	N/A
1978	1,760.8	3,831.2	4,393.6	N/A

Ontario's net cost estimate can be expected to exceed the \$1,135.0 million estimate for three important reasons. First, the income support and supplementation proposal is recognized not to be a replacement for existing transfer systems but rather a new program grafted on to numerous existing programs, and 1973 net impact costs were calculated accordingly. Second, net costs for the years 1974 through 1978 take into account, through the use of an estimated behavioural model, the variability of a dynamic economy. And third, systematic biases in the Survey of Consumer Finances were identified and corrected.

One final point must be made. It can be expected that the net cost of implementing income support and supplementation will grow rapidly. For, in spite of the selection of optimistic assumptions about future levels of unemployment and inflation, net program costs increase from \$2,858.8 million in 1975 to \$3,946.0 million in 1977, and in the following year the proposed program would require government expenditure of nearly \$4,400.0 million.

APPENDIX A
PRINCIPLES AND PROBLEMS
OF
NEGATIVE INCOME TAX

APPENDIX A

PRINCIPLES AND PROBLEMS

OF

NEGATIVE INCOME TAX

The purpose of this appendix is to review the principles and problems associated with negative income tax (NIT). The following material will detail the general structure and operational characteristics of an NIT system, present the significant policy parameters available to policy-makers and direct attention to the conflicting objectives of maximum equity and minimum cost.

1. Analytical Explanation of a Negative Income Tax System

The essential structural features of the most widely and commonly discussed negative income tax system are:

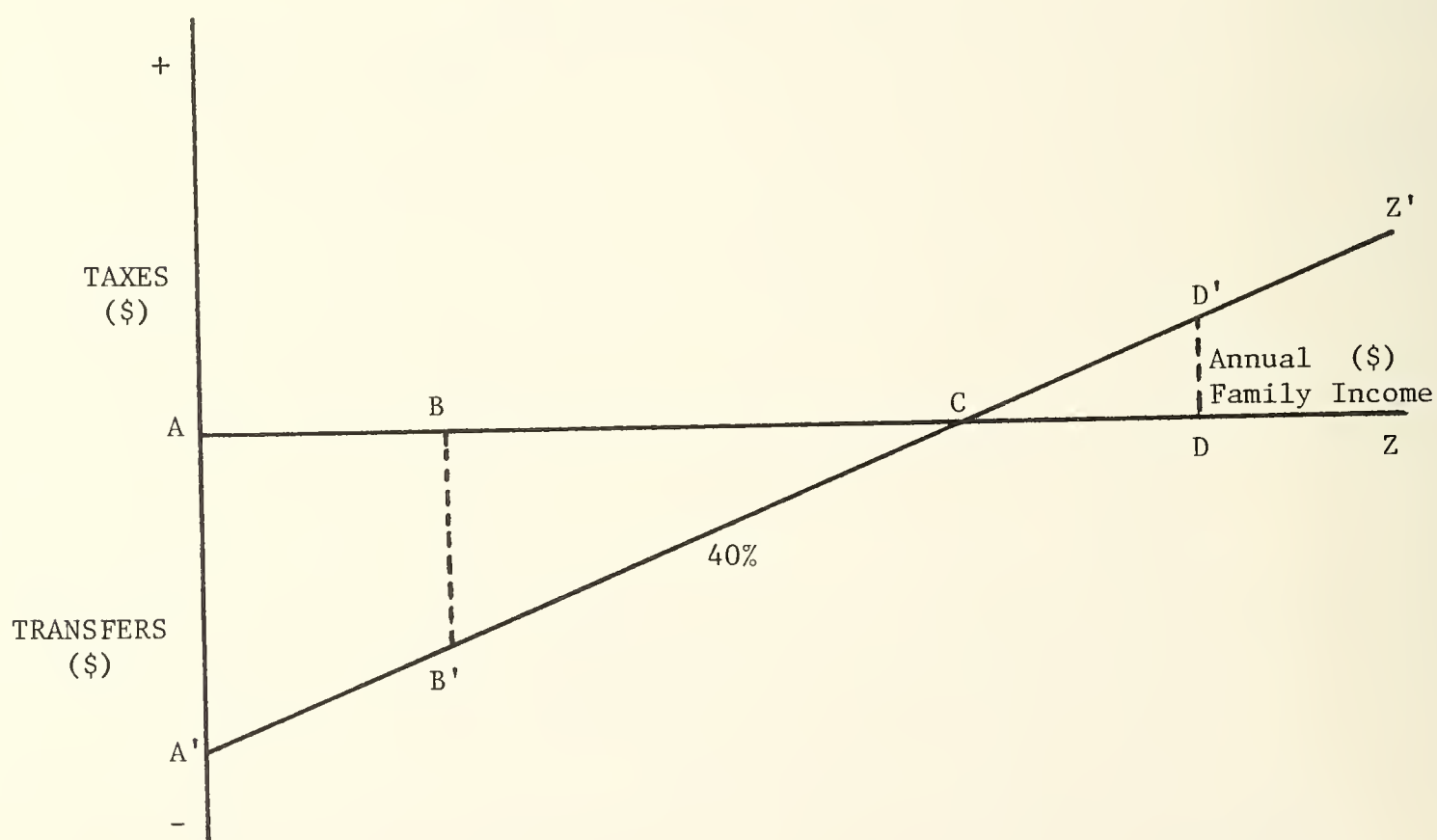
- (i) a socially accepted minimum annual income guarantee increasing with family size;
- (ii) the actual portion of the guarantee transferred to a family is income-related such that the higher the family's annual level of income, the smaller the transfer; and,
- (iii) above a certain level of family income, a family no longer receives transfers from the government but must pay income tax to the government.

The general structure of such a system is analytically portrayed in Figure A.1. The horizontal axis AZ represents the amount of annual family income; the more the income of the family, the further to the right along

the horizontal axis will the point representing the family lie. Reference to the vertical axis indicates if the family receives income from government (transfers), or pays part of their income to government (taxes). For analytical convenience, taxes are viewed as a positive (+) flow of income from a family to government and transfers, the opposite of taxes, are viewed as a negative (-) flow of income from government to a family. The kinked line ACZ' represents the positive income tax system presently enforced in Canada and the diagonal line A'C represents a hypothetical negative income tax system. The vertical line segment AA' indicates the guaranteed income that is transferred to a family with zero income.

DIAGRAMTIC REPRESENTATION OF A
SIMPLE NEGATIVE INCOME TAX SYSTEM

FIGURE A.1



The operation of a negative income tax system can be illustrated with a few examples. If a family's income is AD, then the amount of the family's income that must be paid to government as income tax is equal to DD'. If AB is a family's income, then under the existing income tax system the family would pay zero tax and would receive no additional income from government. But under a negative income tax system, a family with income AB would receive an amount BB' from the government in the form of transfer payments. With zero income, the family would receive transfer payments equal to the annual guarantee of AA' under the NIT system, but would pay zero tax and receive zero benefits under the existing tax system. Finally, if a family's income is AC, the family would receive zero transfers and pay zero tax under either of the two tax systems.

From the above examples and Figure A.1, it is clear that a negative income tax system is conceptually only an extension of the current positive income tax system. The innovative and controversial feature of the extended tax system is that families with income below a certain level would not only not pay income tax, as under the current tax system, but would receive income related transfers (or negative taxes) from government. This is the essence of any negative income tax proposal.

2. Major Policy Parameters

Any discussion of the structure of a negative income tax system revolves around three major parameters. They are the "guarantee", the "tax-back rate" and the "breakeven level of income".

As stated above, the guarantee is the amount of income transferred to a family from the government sector when the particular family's income is zero. In terms of Figure A.1, the guaranteed transfer is AA'. The tax-back rate refers to the rate at which the family's guaranteed transfer is reduced as annual family income increases. If for each dollar of family income the

family's guarantee is reduced by \$0.75, the tax-back rate is 75 per cent. Or, if the tax-back rate is 100 per cent, then for each dollar of family income the guarantee is reduced by one dollar. Figure A.1 portrays a 40 per cent tax-back rate. Finally, the level of family income which yields the family zero transfers and zero taxes is defined as the breakeven level of income. Families with income above this level pay income tax, while those families below, receive transfers. With regard to the diagram, line segment AC indicates the breakeven level of income.

Though the above three parameters are useful in discussing the nature of a particular negative income tax structure, it is instructive to note that by specifying any two of the three parameters, the third parameter is automatically determined. If it is decided that \$3,000 is a satisfactory guaranteed level of income for a family of two adults and two children and that the appropriate tax-back rate should be 50 per cent, then a quick calculation will reveal the breakeven level of income for the family of four to be \$6,000.¹ This implies that there are only two policy parameters actually available to the policy-maker when structuring a simple negative income tax system.

3. Objectives and Difficulties of Selecting Policy Parameters

As with most problems in economics, conflicting objectives must be considered when selecting the parameters defining a negative income tax system.

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1. A simple negative income tax system can be represented by the linear function:

$$T = -G + r Y,$$

where T = tax or transfer
G = guaranteed income
r = tax-back rate
Y = family income

The breakeven level of income is calculated as G/r .

The policy parameters should be selected to:

- (i) insure social and economic equity;
- (ii) minimize disincentives to work; and,
- (iii) keep within reasonable cost constraints.

To explain the major difficulties in trying to select the policy parameters that best satisfy the three overall objectives, it is convenient to consider the problem first from the micro-economic viewpoint and then from the macro-economic viewpoint.

Micro-economic Considerations

With regard to the first two objectives, it must be realized that one of the main motives for instituting a negative income tax scheme is to eliminate the anomaly that families with little or no private income and receiving welfare are often better-off than comparable families not eligible for welfare. When additional welfare benefits such as free hospital and medical insurance, free eyeglasses, free prescription drugs, free dental care, back to school allowances and income exemptions are included, the inequity that exists between families receiving welfare under social assistance legislation and families classified as the "working poor" becomes even more apparent. Given the existence of social assistance legislation which defines and provides socially recognized minimum levels of adequate income, then it is incumbent upon the designers of the negative income tax system to select guarantees and tax-back rates which ensure that the working poor are at least as well-off as those families living on social assistance.

To illustrate the problems of instituting a simple negative income tax system that promotes social and economic equity while maintaining work incentives, some straight forward but realistic examples are examined.

If the tax-back rate on a socially acceptable \$5,000 minimum income guarantee for a family of two adults and two children is set at 100 per cent, then, as is shown in Table A.1, a family with \$4,500 of private income would receive a \$500 transfer. This brings their family income up to the legislated \$5,000 guarantee. But if the family's income is zero, the family would receive a \$5,000 transfer to bring their income up to the guarantee. With such a structure, it is clear that a strong incentive is present for the family not to provide its own income. That is, if members of the family choose not to work, not only does the family income increase from \$4,500 to \$5,000, but the family can also increase its consumption of leisure as well as eliminate any expenditures associated with being employed at what may be an unpleasant occupation.

If the negative income tax system provided a guarantee for a family of four that was below the socially-accepted level of adequate income of \$5,000, say \$3,000, but with a tax-back rate of only 25 per cent, then the family earning \$4,500 would receive a transfer of \$1,875 bringing their total family income to \$6,375. If the family chose not to work, then the family's income would fall to \$3,000, much less than the \$4,500 earned income and some \$3,375 less than the total available income under the negative income tax system. Clearly in this situation, there is more of an incentive for the members of a family who are employed to remain employed.

But there are two problems with the low guarantee and the low tax-back rate. First, if a family has members willing to work but are unable to find employment, the \$3,000 guarantee provides the family with income that is below the socially accepted minimum income. Second, with the \$3,000 guarantee and the incentive inducing 25 per cent tax-back rate, the breakeven level of income is \$12,000. This means that families with as much as \$7,000 of income in excess of the socially acceptable minimum level of income, who by definition are not in need of an income supplement, also receive transfers.

TRANSFERS AVAILABLE TO FAMILIES WITH \$4,500 ANNUAL INCOME							TABLE A.1	
TAX-BACK RATES								
Annual Guarantee (\$)	100%		75%		50%		25%	
	Transfer	Total Income	Transfer	Total Income	Transfer	Total Income	Transfer	Total Income
3,000	-	4,500	-	4,500	750	5,250	1,875	6,375
4,000	-	4,500	625	5,125	1,750	6,250	2,875	7,375
5,000	500	5,000	1,625	6,125	2,750	7,250	3,875	8,375
6,000	1,500	6,000	2,625	7,125	3,750	8,250	4,875	9,375

The above examples illustrate the contradictory aspects of a simple negative income tax system. If an NIT system is designed with a low tax-back and low family guarantees in an effort to maintain work incentives, then it must not only be accepted that families with zero private income receive an income guarantee that is below the socially recognized minimum level of income, but it must also be accepted that families with income less than the breakeven level, but above the socially accepted minimum income level, receive transfers. And in contrast, if a system is designed to insure that only those families with low incomes receive negative income tax transfers, then the implied high guarantees and high tax-back rate preclude any effort to maintain the incentive to work. It appears that the simple negative income tax system is not flexible enough to simultaneously meet the two policy objectives of social and economic equity and maintenance of the work incentives.

Macro-economic Considerations

Turning now to the consideration of the third objective, it is useful to view the problem not at the level of the family unit but at the aggregate level.

In particular, attention should be focused upon the distribution of income and how the distribution relates to the policy parameters. Figures A.2 and A.3 superimpose a representation of the family income distribution over the analytical model of a simple negative income tax system introduced in Figure A.1.

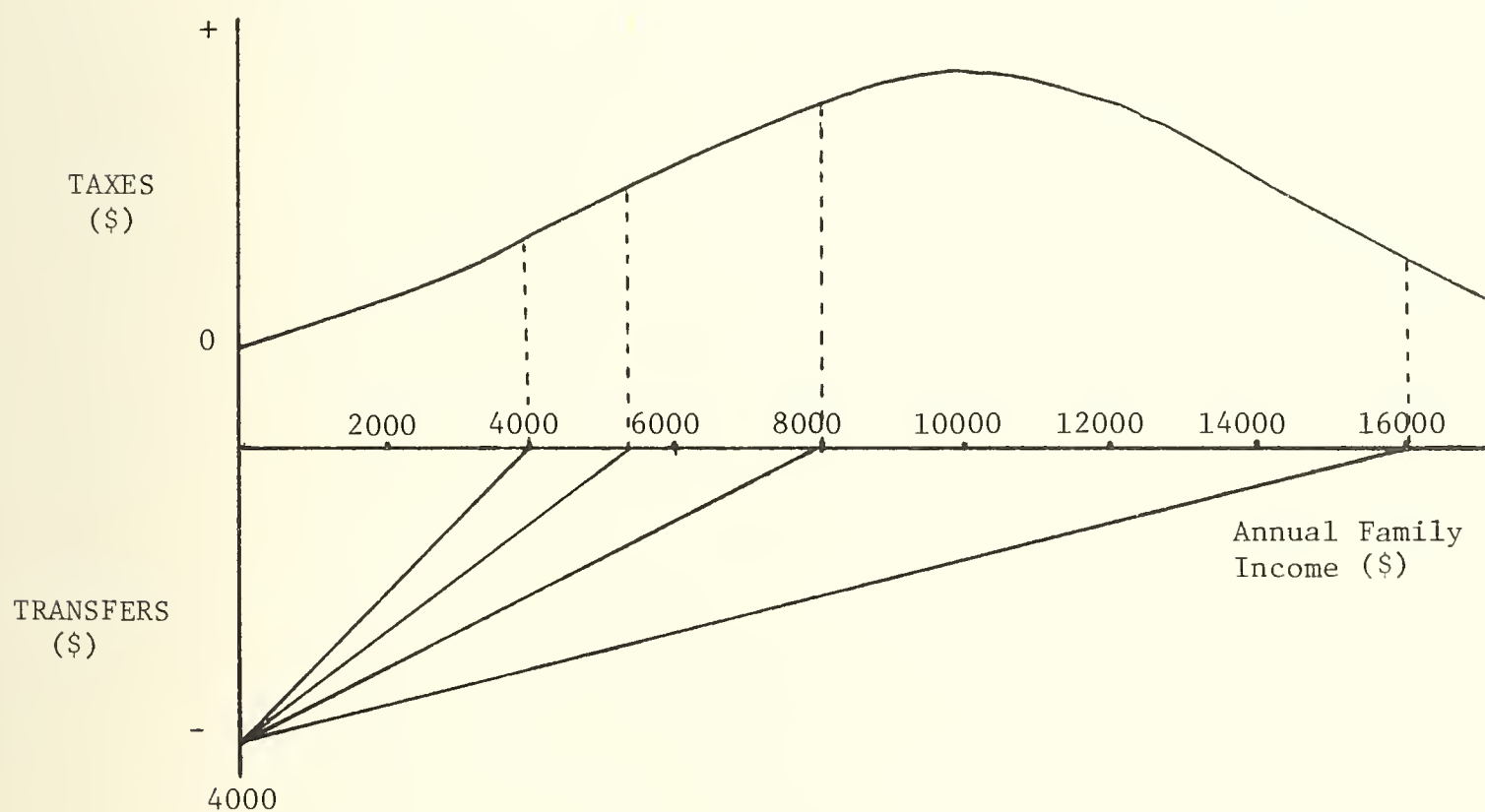
Figure A.2 illustrates why the aggregate costs of a negative income tax system can be expected to be very sensitive to changes in the tax-back rate, given a particular family income guarantee. Table A.2 reveals that with successively lower tax-back rates the breakeven level of income increases and the portion of the population eligible for negative income tax transfers also increases. It should be apparent that because the bulge of the family income distribution occurs in the middle income range, low tax-back rates, with their associated high breakeven levels of income, imply significant increases in cost not only because of the increased generosity of the tax-back rate, but also because of the increase in the portion of the population eligible for transfers. Thus, while low tax-back rates at the micro-economic level maintain the incentive to work, the same low tax-back rates at the macro-economic level ensure a significant increase in costs.

SENSITIVITY OF BREAKEVEN LEVEL OF INCOME TO GUARANTEE LEVEL AND TAX-BACK RATE				TABLE A .2
Annual Guarantee (\$)	100%	75%	50%	25%
3,000	3,000	4,000	6,000	12,000
4,000	4,000	5,333	8,000	16,000
5,000	5,000	6,666	10,000	20,000
6,000	6,000	8,000	12,000	24,000

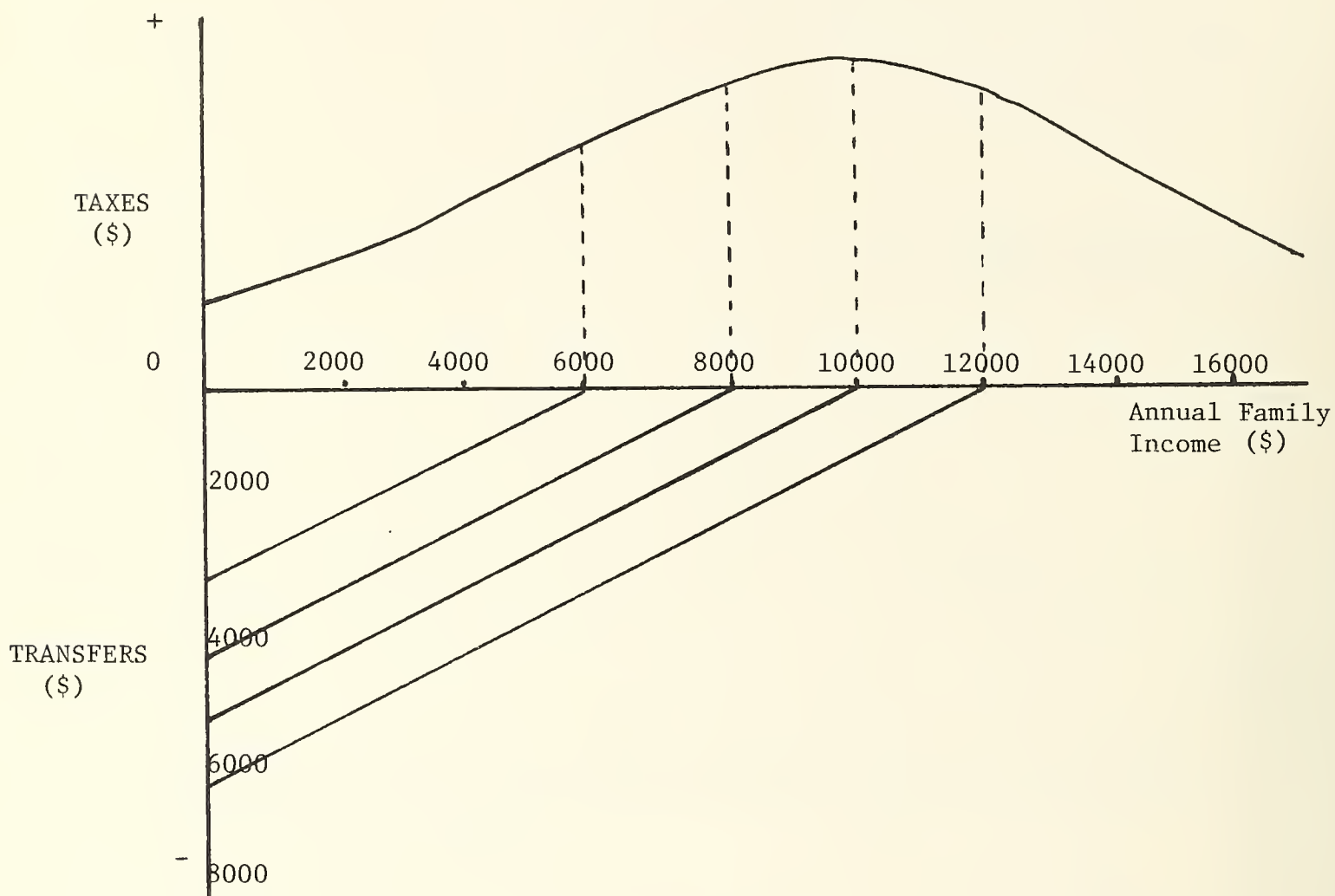
A similar cost sensitivity problem exists when guarantee levels are increased, given a particular tax-back rate. Figure A.3 illustrates that as guarantees are increased, the higher breakeven levels of income make a larger portion of the population eligible for transfers, which in turn, implies significantly increased costs.

SENSITIVITY OF ELIGIBLE POPULATION
TO CHANGES OF TAX-BACK RATE

FIGURE A.2



The macro-economic view indicates that the various negative income tax structures considered for implementation should be evaluated not only for the adequacy of their policy parameters for an individual family unit, but also with serious consideration of the portion of the population made eligible to receive transfers. Acceptance of a too comprehensive system would be both unworkable and wasteful. Unworkable because of the significant difficulties



in financing a transfer system whose cost can be expected to be not only large but also highly volatile, and wasteful because as the breakeven level of income increases, a larger portion of the aggregate transfer payments goes to families whose income lies above the socially recognized minimum level of income.

APPENDIX B
AN ANALYSIS OF THE
WORK DISINCENTIVES
RESULTING FROM THE IMPLEMENTATION
OF SUPPORT AND SUPPLEMENTATION

APPENDIX B

AN ANALYSIS OF THE WORK DISINCENTIVES RESULTING FROM THE IMPLEMENTATION OF SUPPORT AND SUPPLEMENTATION

This appendix presents the reader familiar with the standard static theory of the labour-leisure choice with an analysis of the labour supply response to the implementation of the proposed income support and supplementation system. The analysis is not intended to be all encompassing and rigorous,¹ but rather it is intended to illustrate the standard theoretical arguments which lead to the expectation that the introduction of a negative income tax will result in a negative labour supply response. The first section will review labour supply response by examining the consequence of introducing a simple negative income tax system. The second section analyzes labour supply response with respect to the specific structure of the proposed support and supplementation system.

1. Labour Supply Response to a Simple Negative Income Tax System

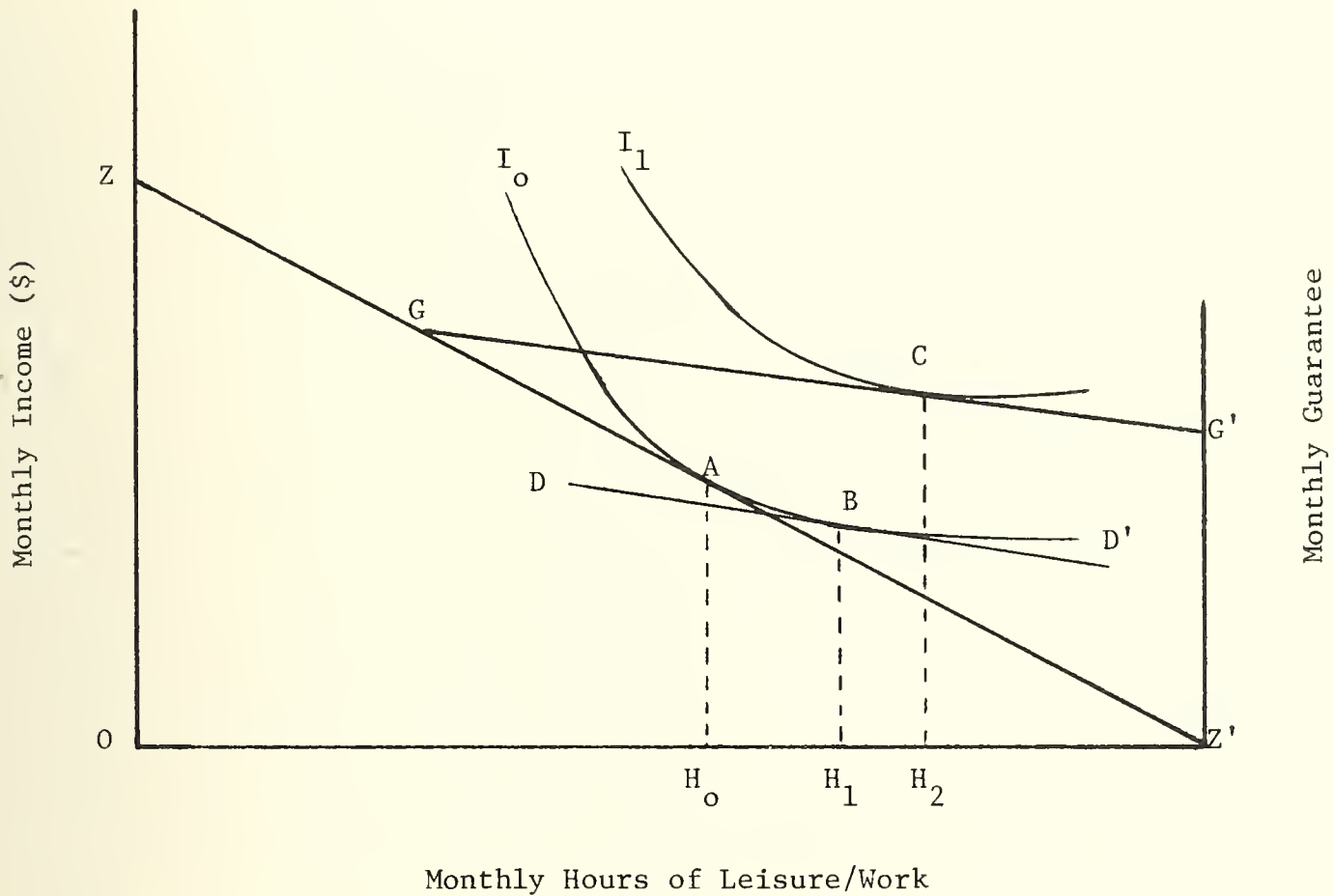
Figure B.1 represents the labour-leisure choices available to a hypothetical worker. The horizontal axis measures, from right to left, the number of hours worked per month and the vertical axis indicates the total

1. For a more encompassing analysis, see: Peckman, J.A., and Timpane, P.M. (Eds), Work Incentives and Income Guarantees, The Brookings Institution, Washington D.C., 1975. pp. 60-87.

monthly income. The slope of the diagonal line ZZ' measures the hourly wage rate. Each indifference curve represents all combinations of money and leisure that yield the worker equal satisfaction; and higher indifference curves represent higher levels of satisfaction. It is assumed that a worker can vary his monthly hours of work by such devices as voluntary over-time, part-time work, and change of jobs. For ease of discussion, all hours worked are assumed to be paid at a single rate.

In the absence of any income supplementation program, the worker is at equilibrium point A. At this point, H_0Z' hours per month are devoted to work and OH_0 hours to leisure. A negative income tax system is now introduced with a monthly guarantee of $Z'G'$ and a tax-back rate of 50 per cent represented by the slope of the diagonal line GG' . The plan has a breakeven point at G; left of this point transfers are not paid. The set of available combinations of labour and leisure under the NIT program changes from ZZ' to ZGG' , and the worker chooses the point C on the higher indifference curve I_1 . At this new position, monthly income has increased from AH_0 to CH_2 but the number of hours worked is reduced to $Z'H_2$ from $Z'H_0$. The actual negative labour response in hours per month is H_0H_2 .

The reduction in hours of work can be divided into an income and substitution effect by drawing line DD' tangent to the original indifference curve I_0 and parallel to GG' . The horizontal distance from A to B indicates the substitution of leisure for labour because of the imposed tax-back rate which effectively reduces the price of leisure. The negative substitution effect follows from the usual constraints of neoclassical utility theory on the shapes of indifference curves. Since the indifference curves are expected to be convex, the lowering of the price of leisure by the imposition of an NIT system implies that DD' must be tangent to indifference curve I_0 to the right of point A. The horizontal distance between B and C reveals the negative



income effect on the number of hours supplied by the worker. This results because leisure is assumed to be a normal good; that is as income increases, more leisure will be consumed.

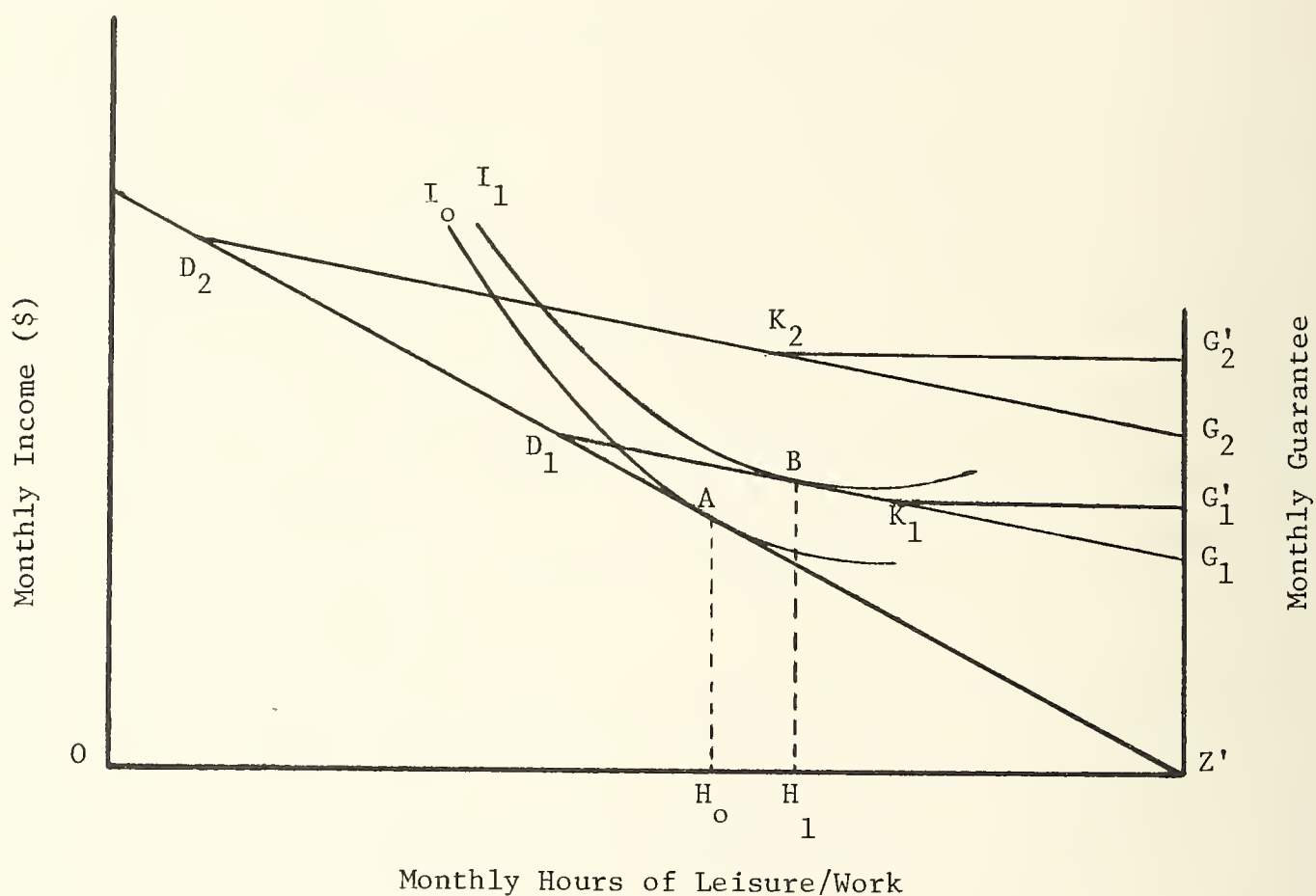
The static analysis indicates the imposition of a negative income tax results in negative income and substitution effects which both tend to reduce the amount of labour supplied.

2. Labour Supply Response to Support and Supplementation

Figure B.2 diagrammatically represents the proposed two-tier negative income tax system. The line D_1G_1 and D_2G_2 are the negative income tax schedules related to the supplementation tier guarantees $Z'G_1$ and $Z'G_2$, respectively.

LABOUR SUPPLY RESPONSE TO THE IMPLEMENTATION OF
INCOME SUPPORT AND SUPPLEMENTATION

FIGURE B.2



The support tier guarantees, $Z'G_1$ and $Z'G_2$, and their associated tax schedules with the higher tax-back rate intersect and become coincident with the respective supplementation schedules at K_1 and K_2 . The benefit structure of the two-tier system is so designed that as support and supplementation guarantees

increase because of family size, the intersection of the two tiers occurs at higher levels of family income. Joining the intersection or kink points of the two-tier system, traces out a line that is oblique to the vertical axis representing income. For this reason, the support and supplementation has often been termed as an "oblique kink two-tier" negative income tax.

But regardless of the added terminology, a static analysis of the two-tiered "oblique kink" system follows the same pattern established in the previous example. An individual, initially at point A, is faced with a new set of combinations of labour and leisure because of the introduction of a negative income tax system. Assuming that the individual is the sole income earner of a family and representing the family's supplementation and support guarantees by $Z'G_1$ and $Z'G_1'$, respectively, the individual selects point B on higher indifference curve I_1 . And still maintaining that leisure is a normal good, B must be to the right of A and, as a consequence, the number of hours of labour supplied will decrease from $H_0 Z'$ to $H_1 Z'$. This is the negative labour supply response that must be expected with the implementation of support and supplementation.

APPENDIX C
DETAILS
OF
OFFSET CALCULATIONS

APPENDIX C

DETAILS OF OFFSET CALCULATIONS

The purpose of this appendix is to detail the additional offset calculations required to estimate the 1973 net costs of implementing the proposed support and supplementation program in Ontario. PROGRES¹ was used for all cross-section simulations.

1. Modified Working Party Method

This method parallels the actual cross-section net cost procedures employed in the Quantitative Report on Income Support and Supplementation, except that the data base has not been extrapolated. Gross costs are first calculated on the assumption that transfers are based on family size and normal family income. To account for the under-representation of actual government transfers received by residents of Ontario by the 1973 Survey of Consumer Finances, the offsetting procedure assumes the unrepresented portions of government transfers are distributed between the recipients and non-recipients of support and supplementation in the same ratios as the represented portion of government transfers. Table C.1 presents the actual offset calculations; the column entitled SCF records the portion of reported government transfers that goes to recipients of income support and supplementation.

1. PROGRES: The Province of Ontario General Redistribution Simulator (VERSION III), Taxation and Fiscal Policy Branch, Ministry of Treasury, Economics and Intergovernmental Affairs, Toronto, 1975.

CALCULATION OF OFFSETS (MWPM)
(\$ Million)

TABLE C.1

<u>Program</u>	<u>SCF</u>	<u>Ratio</u>	<u>Actual</u>	<u>Offset</u>
CPP	(26.7/114.9)	.23	136.5	31.4
UIC	(88.7/391.1)	.23	604.7	138.9
SA	(130.8/151.3)	.86	291.0	250.3
Other	(55.7/148.1)	.38	296.0	112.5
Total				533.1

The net cost is calculated by subtracting the estimated offset from the gross cost estimated from the cross-section simulation.

Estimated Gross Cost	697.9
Offset	<u>533.1</u>
Estimated Net Cost	164.8

2. Ontario Method I

This method first calculates net costs by employing the family-by-family method discussed in Chapter II. To account for the portion of government transfers under-represented in the SCF, this offsetting procedure also assumes that the unrepresented portion of government transfers are distributed between the recipients and non-recipients of support and supplementation in the same ratio as the represented portions of government transfers. Table C.2 presents the actual calculations.

CALCULATIONS OF OFFSETS (OMI)
(\$ Million)

TABLE C.2

<u>Program</u>	<u>SCF</u>	<u>Ratio</u>	<u>(Actual-Observed)</u>	<u>Offset</u>
CPP	(10.9/114.9)	.09	21.6	1.9
UIC	(25.5/391.1)	.07	213.6	14.9
SA	(86.8/151.3)	.57	140.0	79.8
Other	(17.5/148.1)	.12	148.0	17.8
Total				114.4

The final net cost estimate is calculated by subtracting the additional offset from the net cost resulting from the cross-section simulation.

Estimated Net Cost	473.0
Additional Offset	<u>114.4</u>
Final Estimated Net Cost	358.6

3. Ontario Method II

The net cost calculation in this method is similar to OMI except, as is outlined in Chapter III, all transfers going to social assistance recipients have been ignored and the weight of records reporting periods of unemployment have been increased by 32 per cent. The only change in the offsetting procedure between OMI and OMII is that no social assistance transfers are reported by the population receiving support and supplementation.

CALCULATION OF OFFSETS (OMII) (\$ Million)			TABLE C.3	
<u>Program</u>	<u>SCF</u>	<u>Ratio</u>	<u>(Actual-Observed)</u>	<u>Offset</u>
CPP	(9.8/120.6)	.08	21.6	1.7
UIC	(31.9/515.8)	.06	213.6	14.9
SA	-	-	-	-
Other	(15.8/155.8)	.10	148.0	14.8
Total				31.4

The final net cost estimate is calculated by subtracting the additional \$31.4 million offset from the net cost resulting from the cross-section simulation.

Estimated Net Cost	442.6
Additional Offset	<u>31.4</u>
Final Estimated Net Cost	411.2

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4th Floor, Frost Building South,
Queen's Park, Toronto, Ontario

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